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ABSTRACT

The study reported in this dissertation was conducted with the cooperation of the San Antonio Independent School District as part of the Language Research Project (formerly the San Antonio Language Research Project), Department of Curriculum and Instruction, the University of Texas. (For the author's descriptive abstract of the project, see AL 002 445.) Chapters in this document are (1) Introduction; (2) Review of Related Literature; (3) Description of Research Design, Procedures and Data Analyses; (4) Statistical Analyses of the Hypotheses; (5) Summary, Limitations, Conclusions and Recommendations. Appendixes contain (1) Prerecorded instruction for students who were tested; (2) Sample of Sanborn sound tape record; (3) Visual presentation of testing procedure; (4) Scoring sheet; and (5) Rating form supplied teachers in order to determine relationship between numerical scores and teacher ratings. A bibliography concludes the work. (AMM)

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1968-1969 (Year Five) Findings, San Antonio Language Research Project

A Comparative Study of

The Effects of Oral-Aural Language Training on Gains in English Language for Fourth and Fifth Grade Disadvantaged Mexican-American Children

By Thomasine H. Taylor

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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1969

A COMPARATIVE STUDY OF THE EFFECTS OF ORAL-AURAL LANGUAGE TRAINING ON GAINS IN ENGLISH LANGUAGE FOR FOURTH AND FIFTH GRADE DISADVANTAGED MEXICAN-AMERICAN CHILDREN

by

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DISSERTATION
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of the Requirements
for the Degree of

DOCTOR OF PHILOSOPHY

THE UNIVERSITY OF TEXAS AT AUSTIN
August 1969

PREFACE

This study by Mrs. Thomasine Taylor was conducted with the cooperation of the San Antonio Independent School District as a part of the Language Research Project (formerly the San Antonio Language Research Project), Department of Curriculum and Instruction, The University of Texas. In the context of conclusions reached in preceding studies, Mrs. Taylor's findings further point up the critical need for adequate instruction and control of teacher variables.

The apparently opposite conclusions reached by the Taylor study and those reported by Lester Knight, while puzzling in some respects, indicate that treatment effects of language oriented instructional programs appear with more significance when the criterion is an oral language test rather than reading tests. The most telling point that the Taylor study makes is that language programs for linguistically different learners which do not include intensive, structured oral language instruction will result in little or no pupil improvement toward achieving a socially unmarked style of oral language.

Thomas D. Horn

The University of Texas at Austin
August, 1969

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The author is also indebted to Mrs. Ellen Snow at the Southwest Educational Development Laboratory and to the San Antonio Independent School District Development and Dissemination Center for assistance in selecting the sample population. For their cooperation in collecting the data for this study, the author wishes to express her appreciation to the principals and teachers in Barkley, Bowie, Brackenridge, Carvajal, Crockett, Johnson, and Ogden Elementary Schools of the San Antonio Independent School District.

Finally, to Laurel who shared her mother with a dissertation for almost a year, my deepest respect and love.

T.H.T.

The University of Texas at Austin
June 1, 1969

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CHAPTER I

INTRODUCTION

The failures and alleged retardation of Spanish-speaking children in the Southwest[1] has become a matter of widespread concern, a concern that has greatly increased recently. Many research and experimental programs are in progress throughout the Southwest which are attempting to correct this deficiency in the educational programs of the public schools. The one unifying thread in the various attempts to alleviate the problems of the linguistically different child is a concentration on oral language development.

Mexican-American children in Texas enter school speaking little or no English. The state provides him with textbooks written in English and illustrated with situation scenes with which he is not familiar. The school tasks set for him ostensibly are the same as that of native English speakers. He is placed in a competitive situation many times with children whose native language is English. His progress is seriously limited, and he is consequently regarded as retarded or a slow learner. Teachers have come to expect little from these children,[1] and what growth they do see is something less than gratifying. This has led to a negative and somewhat hopeless attitude on the part of the teacher. Concurrently repeated failures and the inability to properly express himself has led the child to a deflated self-concept. Irrevocable emotional scars on the Spanish-speaking child are left and he often remains socially and economically apart from the mainstream of society.

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[1] Richard A. Lamanna and Julian Samora, "Recent Trends in Educational Status of Mexican-Americans in Texas," Improving Educational Opportunities of the Mexican-American (Austin, Texas: Southwest Educational Development Laboratory, 1967).

Background of the Problem

One project[2] designed to develop oral language was begun in 1964 in San Antonio Independent School District. The project included 28 first grade classrooms of culturally deprived urban Spanish-speaking children. The 28 classrooms were arbitrarily assigned to one of three treatments: (1) nine classrooms were designated as Oral-Aural English (OAE) and used especially designed materials which provided intensive oral-aural language training in English for one hour a day using culture fair science materials as the vehicle of instruction; (2) ten classrooms were designated as Oral-Aural Spanish (OAS) which provided intensive oral-aural language training in Spanish for one hour a day using the same science content as the OAE; (3) nine classrooms were designated as No Oral-Aural (NOA) which involved no special oral-aural training, but which used the same science content provided for the other two experimental groups.

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[1] Herbert B. Wilson, Evaluation of the Influence of Educational Programs on Mexican-Americans, Prepared for: National Conference on Educational Opportunities for Mexican-Americans. April, 1968. Austin, Texas.

[2] Thomas D. Horn, A Study of the Effects of Intensive Oral-Aural Spanish Language Instruction, Oral-Aural English Language Instruction, and Non-Oral-Aural Instruction on Reading Readiness in Grade One, The University of Texas at Austin, 1966.

The original purpose of the project was to determine the effect of an intensive oral language program on reading readiness in first grades. The predictive value of oral language achievement on reading readiness and reading achievement was unmistakably significant. Pauck[1] found a high degree of correlation between oral English fluency as measured by the Ott-Jameson Self Text[2] and each of the

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[1] Fredrick G. Pauck, "An Evaluation of the Self Test as a Predictor of Reading Achievement of Spanish-Speaking First Grade Children," Ph.D. Dissertation, College of Education, The University of Texas at Austin, 1968.

[2] Elizabeth H. Ott, "A Study of Levels of Fluency and Proficiency in Oral English of Spanish-Speaking School

Metropolitan Achievement Tests subtests ($P < .0001$). The project has been continued and is now in its fifth year. The emphasis of this study is primarily on oral language proficiency obtained by students who have remained in the project.

Inherent in all the studies emanating from the San Antonio project is the position that children first must speak, then read.[1] If language fluency is an ultimate goal, learning a second language is developmental in that first one must hear it, then speak it, then read it, and lastly write it. The four aspects of language have been heretofore, and in many cases still are, simultaneously imposed on Spanish-speaking first grade children with disastrous results of frustration, loss of self-concept and utter failure to assume a functional role in an English-speaking society and elsewhere.

In 1966 it was decided because of operational conditions to eliminate the NOA experimental group, and to

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Beginners." Unpublished Ph.D. Dissertation, College of Education, The University of Texas at Austin, 1967; Gloria R. Jameson, "The Development of a Phonemic Analysis for an Oral English Proficiency Test for Spanish-Speaking School Beginners." Unpublished Ph.D. Dissertation, College of Education, The University of Texas at Austin, 1967.

[1] Horn, op. cit.

merge those students into OAE and OAS groups. Thus two experimental groups continued with the oral-aural language development programs using the science-based content. The two groups were renamed so that those receiving intensive English instruction were called Language Cognition English (LCE) and those receiving intensive Spanish instruction were called Language Cognition Spanish (LCS).

Purpose of the Study

While earlier research in the San Antonio Project showed that intensive oral language drill as prescribed for the LCE and LCS groups as opposed to the experimental groups receiving San Antonio Independent School District curriculum instruction; i.e., the direct method of teaching English, produced superior gains in English language proficiency by first grade Spanish-speaking children, the study[1] was not predictive in terms of continued superiority.

None of the research studies from the San Antonio Project has thus far analyzed the cumulative effects of instruction on children receiving continuous treatment over a period of years. Therefore the current study will assess the results of the five year program, with regard to English speaking proficiency, now in its last year, and the replicated study now in its fourth and terminal year.

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[1] Ott and Jameson, op. cit.

Educational goals cannot be set unless the status of the English language competence of Spanish-speaking children can be established. The lack of suitable instruments to measure how much oral language these children can now use intelligibly necessitated the development of a new instrument. The new instrument will be considered as a general measure of language competence, which will discriminate between the subjects on the dimensions of language selected to be tested. The Ott-Jameson test,[1] developed earlier, appeared to have deficiencies which rendered the evaluation of oral language competence invalid. For example, (1) the phonemes selected in the Ott-Jameson test were designed for evaluation on the basis of their probability of error occurrence based upon contrastive analysis of adult language; it appeared that an instrument containing the same phonemes couched in ordinary language used by children in a variety of environments would be more desirable; (2) the time element of the fluency portion of the Self Test had limitations as pointed out by Pauck[1] in that the reflective, cautious child was penalized by the limited time allowed him on each item, which called for specific types of cognitive answers; (3) there was no continuity in the attempts to elicit spontaneous language which handicapped the child's developing train of thought and he was forced to refocus his attention to content at a rapid speed which inhibited his performance. Therefore it seemed advisable to devise a fluency test which would attempt to eliminate the shortcomings of the Ott-Jameson Self Test.

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[1] Ott and Jameson, op. cit.

Currently the longitudinal project which started in 1964 and was replicated in 1965 has only a few remaining students who have received continuously the oral-aural treatment using the science materials in two treatment forms, LCE and LCS. The expected transfer of training from highly structured language teaching materials to proficiency in language in general appears to be of importance for the population concerned.

If the children in the experimental treatment groups appear to be significantly more competent in the use of English than the control group, then a system of instruction for teaching English will have been empirically supported and a sound basis for its adoption in other areas will have been established. On the other hand, if the results show no appreciable superiority in favor of the experimental children, then it is equally important to have a reasonably sound basis for modifying the instructional program. Of course, the measuring instrument is a critical factor in the study and the basis for decision-making rests with the test itself.

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[1] Pauck, op. cit.

Statement of the Problem

This study sought to: (1) determine if the children participating in the San Antonio Independent School District project for four and five years appear to have significantly benefitted in language development from the two experimental treatments, i.e., LCE and LCS, when compared to a control group composed of fourth and fifth grade children receiving no special language treatment; (2) develop an instrument by which a measure of the quality and quantity of productive language Spanish-speaking children have attained at the intermediate grade levels.

Hypotheses

The research design calls for testing the following nine null hypotheses listed below:

1. There will be no significant difference among the LCE, LCS and Control groups on phonology at the fifth grade level.
2. There will be no significant difference among the LCE, LCS and Control groups on intonation at the fifth grade level.
3. There will be no significant difference among the LCE, LCS and Control groups on fluency at the fifth grade level.
4. There will be no significant difference among the LCE, LCS and Control groups on total language score at the fifth grade level.
5. There will be no significant difference among the LCE, LCS and Control groups on phonology at the fourth grade level.
6. There will be no significant difference among the LCE, LCS and Control groups on intonation at the fourth grade level.
7. There will be no significant difference among the LCE, LCS and Control groups on fluency at the fourth grade level.

8. There will be no significant difference among the LCE, LCS and Control groups on total language at the fourth grade level.
9. There will be no correlation between the three subscales and total score, i.e., (a) phonology and intonation (b) phonology and fluency as measured by word count (c) intonation and fluency (d) and each subscale with total language score.

Proposed Data Analyses

The method of analyses to be used for hypotheses one through eight is an analyses of variance. On hypothes s nine a correlation technique using a 4×4 intercorrelation matrix will be used.

Summary

Linguistically different children, specifically Mexican-Americans in the Southwest, have suffered from seemingly inappropriate educational curricula. Efforts to adapt methods and materials to suit their needs are currently in progress. One such effort is the San Antonio Independent School District project which has been in progress for five years. The remaining students who have received continuous oral-aural treatment for four and five years in this program will be compared to a control group receiving no special oral-aural treatment in an effort to determine the effectiveness of such instruction. A new instrument has been developed which will be used with both experimental and control groups in order to measure oral language development. It is hoped that this study will provide information which can be used in determining future curricula and at the same time provide an instrument by which language growth can be measured. The hypotheses and method of analyses concluded the chapter.

CHAPTER II

REVIEW OF RELATED LITERATURE

This study deals with measurement of language acquired by nonnative speakers of English in an experimental oral language project, thus the chapter will review literature on some of the theories and research dealing with three major topics: acquisition of native language, acquisition of a second language, and testing theories and procedures for evaluating language development in children learning a second language.

Acquisition of Native Language

Carroll[1] discusses several theories concerning the language learning process. He states that a purely Pavlovian view of language has been replaced by various "reinforcement" theories. One example is that the child tends to learn whatever responses are "reinforced" by either a direct or indirect reward. In other words, when he discovers that certain responses get him what he wants and when he experiences something pleasurable following his "speech" he will repeat it until it becomes a part of his permanent knowledge of language. Responses which are not rewarded or reinforced tend to be extinguished or to drop out of his repertoire.

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[1] John B. Carroll, "Language Development in Children," in Psycholinguistics, a Book of Readings, Sol Saporta, ed. (New York: Holt, Rinehart and Winston, 1962), pp. 331-345. Hereafter, this article is referred to as "Language Development," and this book is referred to as Psycholinguistics.

This theory is supported by Langer[1] who says that a child has no native instinct to imitate or copy verbal behavior, but that he learns to do so only when imitative behavior is rewarded. Speech is learned and not instinctive behavior. She describes work done with "wild" children who had been discovered living with animals in the jungles of India. Although these children were estimated to be twelve or fourteen years old, they had never learned to speak. After extensive attempts at language training, the investigators claimed that the vocabularies never exceeded 40 words. Langer claims that the tendency to vocalize seems to be a passing phase of early life. If language at each phase is not reinforced the child is forever handicapped.

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[1] Susanne K. Langer, "Language," in Foreign Language Teaching, an Anthology, Joseph Michel, ed. (New York: The Macmillan Company, 1967), pp. 3-40. Hereafter this book is referred to as Foreign Language Teaching.

Another theory of the language learning process is advanced by Mowrer[1] who believes that during the "cooing" and "babbling" stages that the child is rewarded by the sound of his own voice. Articulatory sounds that he makes which are similar to sounds made by his mother and others are self-rewarding and sufficiently motivate him to repeat the sounds which he hears uttered by people whom he values in his environment.

According to Penfield[2] man's ability to talk is due to development and employment of specialized speech mechanism of a dominant hemisphere. There is a lag of two to seven months from the time a child first hears a word until he can reproduce it meaningfully. The child must make a neuronal record of the concept to be named and a neuronal record of the word. His third task is to establish an automatic reflex connection between the two. In Hill's[3] definition of language he says that language is a set of symbols which, when learned, become a substitute for actuality in the learner's own culture. When this connection is established, the symbols can be manipulated and language is in progress.

---

[1] A. H. Mowrer, Learning Theory and the Symbolic Processes (New York: John Wiley and Sons, Inc., 1960), pp. 70-163.

[2] Wilder Penfield, "The Learning of Languages," in Foreign Language Teaching, pp. 192-214.

[3] Archibald A. Hill, Linguistic Structures: From Sound to Sentence in English (New York: Harcourt, Brace and World, Inc., 1958), pp. 1-12.

Sounds and Pronunciation

Leopold[1] says that the bulk of the data on language acquisition leads one to believe that each child goes his own way in mastering the language of his environment. Scholars have tried to establish a format by which they can predict a sequence of acquisition of sounds, but no two lists were consistent enough to show a universally accepted patterning in sound development.

The child will distinguish only the coarser contrasts in the beginning and will need time to discriminate between the finer subcontrasts between the sounds he hears. The same applies to his efforts to reproduce the sounds in his own speech. Like learning to control muscles in arms and legs, the child must learn to control muscles in the speech apparatus. This takes time and he will learn the coarser, more approximate movements sooner than the finer adjustments. Jakobson[1] made a major contribution to the discovery of great lines of development in child language. Instead of trying to find the sequence in which children learn sounds, he believed that attention must be given to acquisition of sound categories. This theory has proved remarkably reliable, and has fixed the position of child linguistics within the competence of general linguistics.

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[1] Werner F. Leopold, "Patterning in Children's Language Learning," in Psycholinguistics, pp. 350-358.

It is claimed by Politzer[2] that native English speakers have been conditioned to produce the sound units of English correctly and to hear the differences between them. The ability to understand spoken English ultimately depends on the fact that one can hear the differences in the sounds that are used according to the system of the English language.

Intonation

Weir[3] contributed much to the information concerning the acquisition of a native language by recording the half-dream soliloquies at bedtime of her two-year-old son for a period of three months in 1961. Her findings support the almost universal idea that intonation is one of the earliest linguistic features acquired by a child, certainly as far as the purely imitative phonetic aspect of language acquisition is concerned. She writes that intonation in beginning speech serves as a marker of sentence boundaries. From her sample of child language she concluded that the most frequent intonation contour is the final fall; next the rising contour; and the least frequent was sustained contour. Although the intonation pattern was yet unstable, "sentences" could be distinguished by the intonation contour which was followed by a pause of consistent duration.

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[1] Roman Jakobson, Kindersprache, Aphasie und allgemeine Lautgesetze, Uppsala, 1941. Cited by Leopold, loc. cit.

[2] Robert L. Politzer, Foreign Language Learning (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1965), pp. 1-152.

[3] Ruth Weir, Language in the Crib (The Hague: Mouton and Company, 1962), p. 29.

Brown[1] reports that children first respond to intonation patterns. He gives an example in which a child was asked by his father in three different languages, "where is the window?" In each case the child pointed to the window. Not able to believe that his child could understand three languages, he asked, "where is the door?" in the native language whereupon the child again pointed to the window. Brown theorized that the child was reacting to the intonation contour that was common to all four questions. The two questions were at first perceptual equivalents and were identified as members of one speech category defined by intonation rather than phonetic features. The father could have directed his son to discover the unlike features (window and door) of the questions which would have guided him to the correct response. Then he would have been responding to the phonemic differences with which he had been experimenting.

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[1] Roger Brown, Words and Things (New York: The Free Press, 1966), p. 203.

It is believed by Braine[1] that two-year olds are cued as to definition of borders (separation of the elements of the sentence) between constituents of a sentence in two ways. First he is cued by the intonation contour, and secondly, he is cued by the role played by the "closed class" morphemes; i.e., a, an, some, of, by. Even though a very young child does not differentiate them clearly they may provide, nevertheless, boundary markers for the constituents of the utterance.

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[1] Martin D. S. Braine, "On Learning the Grammatical Order of Words," in Readings in the Psychology of Language, Leon A. Jakobovits and Murray S. Miron, eds. (Englewood Cliffs, N.J.: Prentice Hall, Inc., 1967), pp. 232-257. Hereafter this book is referred to as Psychology of Language.

Meaningful Speech

Meaningful speech might appear during the last three months of the first year. A child learning his native language will name things which are interesting to him. There has been no lists attempted as to what words are learned first. The child alone judges what he needs and wants to say. There are gross semantic classifications with gradual refinement of the vocabulary he needs to command.[1] The child's first breakthrough into language, according to Brooks,[2] comes when he first voluntarily matches an object in the environment with the vocal sounds by which it is designated in the speech community. Carroll[3] says that although a child's first attempts at meaningful language are gross and global, they gradually become refined into acceptable language of his environment. His language assumes meaning when the child learns what verbal or gestural responses will get what he wants and will ward off what he dislikes.

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[1] Leopold, op. cit.

[2] Nelson Brooks, Language and Language Learning (2d ed.; New York: Harcourt, Brace and World, Inc., 1964).

[3] Carroll, "Language Development."

Syntax

With regard to a child's grammatical structures, Leopold[1] says that the child attempts syntax before morphology. A small child gets along very well without morphological devices. He begins with one-word sentences. His attention is captured by the semantic peak of a sentence which is also the phonetic peak through stress, and this becomes his "sentence." It may be any part of speech, but for the child it is a vehicle of statement. The intonation he mimics will be that which expresses his desires. He will use interrogative intonation to ask permission or ask for information. He progresses from one-word sentences to two-word sentences and might well ask a question by saying "kitty hungry?". These coarse semantic utterances are understood by his listeners because of the situation, but day by day he adds the refinements which he hears repeatedly from the adults with whom he lives.

Van Raffler Engel[2] has observed from her extensive studies and observations of children's linguistic behavior that the parallelism in Italian, Russian, and English speaking children has nothing to do with syntax. She believes that syntax is acquired later and that what is universal in language acquisition by children is not syntax, but concept formation. During early development children leave out the function words, and it is these function words which carry the greatest amount of syntactic information. Children's one-word sentences in the beginning of meaningful speech bear out her assumption that semantic factors rather than syntax is basic. In other words the semantic whole precedes the syntactical parts.

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[1] Leopold, op. cit., p. 356.

[2] Walburga Von Raffler Engel, "Some Suggestions for Research on First and Second Language Acquisition," Etudes de Linguistique Appliquee, University of Besancon, France, 1968.

How is it that small children get around to combining words into sentences instead of using them singly or in fragmentary phrases is yet unexplained. Mowrer[1] concedes that sentence making is somehow "learned from parents," but he also makes the point that it is entirely possible that each child independently discovers this by himself.

Assuming that a listener's knowledge (formal or informal) of linguistic rules facilitates his perception of speech, Miller and Isard[1] conducted an experiment in which they hypothesized that ungrammatical strings, which violate both semantic and syntactic rules would be most difficult to repeat, and that grammatical sentences which obey both semantic and syntactic rules would be the easiest. This assumption proved to be correct. The scores secured from their experiment were: 88.6 percent of the grammatical sentences and 56 percent of the ungrammatical strings were repeated exactly by college students. An interesting result was that upon analysis of the data, the subjects' performance significantly improved as the experiment progressed. The conclusion drawn by Miller and Isard is that sentence perception depends on one's internalization of syntactic and semantic rules whether he is aware of the rules or not.

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[1] Hobart O. Mowrer, "A Psychologist Looks at Language," in Psychology of Language, pp. 6-50.

Braine[2] explored the potentialities of the concept of "contextual generalization," for explaining the acquisition of word order. He explained contextual generalization as follows:

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[1] George A. Miller and Stephen Isard, "Some Perceptual Consequences of Linguistic Rules," in Ibid., pp. 219-231.

[2] Braine, op. cit.

> When a subject, who has experienced sentences in which a segment (morpheme, word, or phrase) occurs in a certain position and context, later tends to place this segment in the same position in other contexts, the context of the segment will be said to have generalized and the subject to have shown contextual generalization. (p. 232)

He selected a group of intermediate grade children and taught them a simple artifical language of six words. Three words belonged to group A and the other to group B. During the initial learning period, the language A words were always placed before B words. To test the contextual generalization theory the children were presented with four generalization problems. These were a series of sentence completion problems. A word from the new "vocabulary" was presented either preceded or followed by a vacant position. On the performance of the generalization 78 percent of the problems were filled in correctly with the word that had occupied the designated position in the initial learning. The second position was filled in correctly 91 percent of the problems as compared with 66 percent for a vacant first position.

The conclusion Braine reaches is that subjects who have experienced sentences in which words occur in a certain position and context tend to place these words in the same positions in new contexts. "Such behavior indicated the learning of an association of words with their positions, the context generalizing." (p. 235)

A companion experiment was conducted in order to determine if variable length items would affect the learning process. The results indicated that the length did not matter. What seemed to be indicated was that learning a variable length phrase as a unit and being told that it always came first or last in a sentence made learning easier than trying to learn the positional relationships between the words taken individually. Braine asserts that experiments using artificial languages cannot yield any direct information about how the natural language is actually learned, however, using an artificial language does provide a vehicle for studying learning and generalization processes hypothetically.

Morphology and Parts of Speech

Carroll[1] points out that morphology begins to develop about the third year of life. Berko[2] conducted an experiment in 1958 which indicated that children have learned the morphological system of English by the age of five. Her experiment dealt with nonsense words. The children, who were selected from the Harvard Preschool in Cambridge and the Michael Driscoll School in Brookline, Massachusetts, were presented with an imaginary character and told that it was a wug. Then the administrator showed the subject another wug and supplied an open ended sentence like "Now there are two _____." The subject supplied the plural form of wug, i.e., wugs. Berko tested several areas of morphology including plurals, progressive verb forms, past tenses, third person singular verb forms, possessives, compound words, adjectival inflections. Her theory was that by using nonsense words she could prove that children had not simply learned the forms they were using, but rather had internalized the morphological system of the English language. By supplying correct forms the subjects demonstrated that they were applying generalizations which they had learned already. They performed nearly as well as adults.

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[1] Carroll, "Language Development."

[2] Jean Berko, "The Child's Learning of English Morphology," in Psycholinguistics, pp. 359-375.

Brown[1] conducted another experiment in 1953 pertinent to early language acquisition using nonsense words.

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[1] Roger W. Brown, "Linguistic Determinism and the Part of Speech," in Psycholinguistics, pp. 503-508.

His purpose was to show that children by the age of three and four years of age had developed a sense of linguistic determinism (determination of class forms into which words fall) in so far as nouns and verbs were concerned. Brown concludes that young English-speaking children take the part of speech membership (such as nouns or verbs) of a new word as a clue to the meaning of the new word. He speculates that it is quite probable that speakers of other languages will have detected the semantic character of their parts of speech. It would appear from these conclusions that sensing the grammatical function of words affect cognition of those who speak the language.

Linguistic Environment

The quality of the child's early linguistic environment is probably the most important external factor affecting the rate of his language development. McCarthy[1] listed the following factors of environment which significantly affect language development in children: socio-economic status of family, variety of experiences, age of associates, number of siblings, and bilingual background.

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[1] Dorothea McCarthy, "Language Development in Children," A Manual of Child Psychology, Leonard Carmichael, ed. (2d, New York: Wiley, 1954), pp. 492-630.

Wood[1] says that emotional stability of parents appears to play a significant role in the language development of children. Articulation seems to suffer most when parents are oversolicitous, do not talk to their children, use baby talk, or unconsciously or consciously reject them.

Noam Chomsky[2] differs strongly from all recent writers on language acquisition. His position is that the human infant possesses an inherent species-specific ability which enables him to construct an elaborate, and accurate, internal grammar of operational rules from the small and imperfect sample of language he hears. Such an inherent ability, he believes, is quite beyond the reach of stimulus response learning, and is also independent of formal teaching. It is, however, the basic characteristic both of cognition, and of mind.

Acquisition of Second Language

All learners of language, unless deformed in some way, have the same physiological equipment[2] with which to speak. Development from unintelligible infant noises to meaningful speech in the native tongue appears to follow a consistent chronological pattern, but no such pattern has been observed in the acquisition of a second language. Brooks goes on to say that in order to speak the second language, learners must have a model to follow and something to say. He can invent the message, but he cannot invent the language by which to communicate it. Silence on the part of the student usually does not indicate that he has nothing to say, but rather that he does not have the ability to say it.

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[1] Kenneth S. Wood, "Parental Maladjustments and Functional Articulatory Defects in Children," Journal of Speech and Hearing Disorders, XI (1947), 255-275.

[2] Brooks, op. cit.

[3] Noam Chomsky, Language and Mind (New York: Harcourt, Brace and World, Inc., 1968).

Function of Analogy

Lado[1] claims that each language has its own habits, conscious and subconscious. To change any part of the language habit, be it an emotional, muscular, or intellectual process, is a major undertaking; and to set up a parallel system in learning a foreign language is an equally formidable task. Fortunately, in many cases, the native language patterns or habits can be used to a certain extent in learning the new language. Where the components of the language overlap, the learner can expect little difficulty. Where the learning difference is wide, learning a second language becomes more difficult, and is facilitated by a description of the differences.

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[1] Robert Lado, Language Teaching (New York: McGraw-Hill, Inc., 1964). Hereafter, this work is referred to as Language Teaching.

The most important fact about the functioning of analogy, according to Dunkel,[1] is that one becomes aware of it only when it is unsuccessful, and students and teachers often fail to realize how powerful and helpful a force it is. The same is true of many habits transferred to the second language from the native one. Brooks[2] says that because it is recognized that analogy functions liberally in the acquiring of the mother tongue, pattern practice is an effective learning tool because it depends upon the reaction to hidden sameness as contrasted with minimal differences when one sentence is compared with another, e.g., "The lamp is on the table." with "The book is on the table."

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[1] Harold B. Dunkel, Second Language Learning (Boston: Ginn and Company, 1948), p. 90.

[2] Brooks, *op. cit*.

Responses Must Be Practiced Until Automatic

Levenson,[1] Stanley, and Kendrick imply that what constitutes habit formation is a child's auditory recognition and oral repetition of specific language patterns. The child's speaking capability is developed by muscular movement exercised by proper intonation to the point of automatic response. The child's performance indicates the degree of his mastery of specific material. In contrast, Diller[2] offers the theory that language learning begins with a basic stock knowledge. Forms, words, and phrases must be memorized through repetition in a rote manner. The basic building blocks of a sentence are words, and the relationship between those words comprise the sentences. To generate original speech, the child simply rearranges the words or phrases in an acceptable syntactic structure.

There is danger, however, in overpracticed repetition. Using Osgood's semantic differential, Lambert and

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[1] City of Chicago Board of Education, "The Audio-lingual Approach to Language Learning," in Readings in Foreign Languages for Elementary Schools, Stanley Levenson and William Kendrick, eds. (Waltham, Mass.: Blaisdell Publishing Co., 1967). Hereafter, this book is referred to as Foreign Languages for Elementary Schools.

[2] Edward Diller, "Levels of Learning a Foreign Language," in ibid., pp. 170-179.

Jakobovits[1] tested three groups of college students. The subjects first filled out a booklet in which they rated five words on nine semantic scales. Then each group was subjected to two treatments: (1) experimental satiation in which the subjects said the word aloud for 15 seconds, two or three times per second; they were then immediately exposed to the scale on which they made their ratings, and (2) another group received instructions to sit silently after seeing the word for 15 seconds. The conclusion was that continuous repetition of words reduces the intensity of their connotative meaning. The continuous verbal repetition of words by the subjects moved the semantic ratings closer to the point of meaninglessness on the scales. While this study was done with college students using single words, it might hold true with children and with larger semantic units. It must be borne in mind, however, that there would be a different effect of continuous repetition if the words were known words, or words which were being learned.

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[1] Wallace Lambert and Leon Jakobovits, "Verbal Satiation and Changes in the Intensity of Meaning," Journal of Experimental Psychology, LX (1960), 376-383.

Carroll[1] states that current doctrines stress the need for overlearning of language patterns by drills known as pattern practice. It is not enough to drill on purely repetitive sentences, but what is essential is drilling on repetitive sentences with varying elements. These drills with variations in vocabulary, transformations and morphology tend to make use of the patterns automatic.

According to Politzer[2] fluency in a second language depends to a large degree on the modeled utterance a learner may be able to recall in a specific situation. Sentences or utterances that have been learned in connection with a specific situation are likely to suggest themselves again as models in a similar situation, thus content used assumes a vital role in language learning. Sentences and utterances learned which have not been associated with anything are not likely to occur to the learner again. Politzer advises that it would be helpful for learners to associate utterances with situations when second language learning begins.

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[1] John B. Carroll, "Research on Teaching Foreign Languages," in Foreign Languages for Elementary School, pp. 70-126. Hereafter, this article is referred to as "Teaching Foreign Languages."

[2] Politzer, op. cit.

Incidental Learning

While language teaching must be structured and developmental, second language learning for small children should be a means to an end. Manuel[1] believes that experimentation is greatly needed to find ways of making learning of languages more an incidental outcome of other activities. This in a large measure is how children learn their native language and should be carefully noted by teachers of English as a second language. Extensive practice is necessary in order to learn a language and the greatest handicap now in learning a second language is the lack of opportunity to use it in normal activities. Learning the language cannot be left solely to incidental learning, but uses should be provided for the language taught, so that practice is incidental to the routine of the classroom.

Penfield[2] says that a child has a psychological urge to get what he wants, whether it is satisfaction of his physical needs or his curiosity. Language is not his primary goal in a classroom, but rather his desire to achieve success in games and problems. Lambert[1] implies that acquiring a second language and motivation are inseparable. He theorizes that a learner may look on his learning task as making him better educated or as equipping him with a useful skill for his future occupation with little regard for the culture or the people represented by the target language. He may want to become a potential member of the other language community. In Lambert and Peal's study[2] in Canada they found that the attitude toward the target language appeared to play the greatest role in successful learning of the second language.

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[1] Herschel T. Manuel, "Spanish-Speaking Child in Texas Schools," Proceedings from the Texas Conference for the Mexican-American, Texas Education Agency, April, 1967, pp. 72-86.

[2] Penfield, *op. cit*.

Stern[3] reports that fluent bilingualism appears to be achieved with little conscious effort on the part of the child when the language of the preschool is different from that of the home language if there is good will toward the new language in the child's home. He states that certain social and emotional factors in language learning, particularly the attitudes held by children and their families, play a significant part in second language learning. He says it is largely a matter of motivation and attitudes.

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[1] Wallace Lambert, "Psychological Approaches to the Study of Language," in *Foreign Language Teaching*, pp. 215-252.

[2] Elizabeth Peal and Wallace E. Lambert, "The Relation of Bilingualism to Intelligence," in *Foreign Language Teaching*, pp. 143-191.

[3] H. H. Stern, *Foreign Languages in Primary Education: The Teaching of Foreign or Second Languages to Younger Children* (Hamburg: UNESCO Institute for Education, 1963).

Sounds

A native English speaker's entire ability to understand spoken English depends ultimately on the fact that he can hear those differences in sounds that are used according to the system of the English language. Learning a second language is even more dependent on mastering the sound system. The ability to hear correctly is crucial in second language learning. A primary principle is that a student must: (1) learn to distinguish the differences between phonemes of the second language; and (2) the differences between the foreign phonemes and those native ones that are unacceptable substitutes.[1]

Brooks[2] claims that the first task of a second language learner is to deal with sound, order and form using only a minimum vocabulary. Vocabulary may proceed without hinderance once the first three strands of language are mastered. Sounds are the integral parts of language, but they are not language in and of themselves. Their essential function is to serve as an arbitrary set of symbols which signal meaning between members of a given speech community. Finocchiaro[1] cites as the first principle of language learning that spoken language is primary. Sounds take precedence in learning.

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[1] Politzer, op. cit.

[2] Brooks, op. cit.

A linguist's first statement about language is that it is made up of sounds, and that most language teachers realize that their first task is to train students to manipulate a set of sound symbols. Hill[2] has listed some rules governing good and bad books for teaching a foreign language. As an example, a bad book covers pronunciation in five or six pages, presenting materials in terms of letters and their sounds. It usually presents a system of spelling in the native language to indicate the pronunciation of the foreign words and phrases. A good book describes the sounds of the foreign language in terms of articulation. Hill does not claim that description of sounds and how they are made is a substitute for imitation of native speech. The purpose for articulatory description is that it draws the student's attention to exactly what he is trying to imitate. A good book also uses terminology which is accurate and fully explained, so that in describing the t's in _two_ and _tu_, the term _aspiration_ is introduced. A good book presents pronunciation in terms of contrasts so that they appear in normal and complete sentences. Pronunciation is presented throughout the book, and not only in the introductory pages.

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[1] Mary Finocchiaro, Teaching English as a Second Language (New York: Harper and Row, 1958).

[2] Archibald Hill, "Language Analysis and Language Teaching," Foreign Language Teaching, pp. 91-111.

Previous Experience Necessary

Lado[1] explains that since all experiences leave a trace in the memory store, it can be assumed that all previous experience is a factor in learning a new language. Practically speaking, however, Lado modifies this factor in second language learning by saying that only repeated experiences that have left a facility of the force of habit will influence new language learning.

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[1] Lado, _Language Teaching_.

Age of Learner

Age is a major variable, and children and adults must be taught differently. Lado[1] states that preschool children can learn a second language by exposure in much the same way they learn their native language. They can learn it as completely as a native speaker and no special technique is necessary to teach this age group other than to bring them in contact with the language in situations which require its use. Brooks[2] says much the same thing when he says that second language learning can be begun at any age, but how a child learns a language depends greatly on the age of the learner. A young child has an advantage because of his muscular and neural plasticity which permits him to readily adopt new speech habits; however, the value of his learning is dependent on the guarantee that his instruction and exposure to the language will continue. He divides the two types of learners as those eleven or twelve years old and younger and those who are older. The younger children are able to accept a new language without relating it directly to the mother tongue, whereas older children find difficulty in doing this. Children are nearer to an age in which their native language was learned. "As the curve of learning by imitation declines with increasing age, the curve of learning by analysis rises."[1]

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[1] *Ibid.*

[2] Brooks, *op. cit.*

Carroll[2] says that very young children do not learn languages as easily as has been supposed and this contradictory statement to almost standard belief is supported by a report by Stern of a Swedish experiment seeking to teach English as a second language:

> A more careful evaluation of the pupil's progress in pronunciation and intonation by means of scientific procedures at the end of the experimental period led to the somewhat unexpected conclusion that pronunciation as well as understanding improved more rapidly the older the pupils were. Pupils of 11 years of age learnt more accurately and more quickly than the seven-year olds. Although these results are far from final they seem to disprove one of the hypotheses on which the experiment was founded, namely, that younger children learnt more effectively because of the greater imitative powers that are attributed to children in their early years.[3]

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[1] _Ibid._, p. 116.

[2] Carroll, "Teaching Foreign Languages."

[3] Stern, _op. cit._, p. 42.

It must be kept in mind, however, that while older children may appear to learn specific aspects of language quicker than seven year olds simply by virtue of their knowing what specifics are expected of them, the information reported by Stern may be misleading. Very young children are likely to learn easily and quickly all aspects of language unwittingly. For them language is not taught at all. It is learned as a by-product of other pursuits. They learn to understand the language, speak the language, think in the language, even ignore the language. Older children, on the other hand, who have by age eleven[1] become more analytical in their language learning, will concentrate on a specific item which is being taught, thereby reflecting a superior performance. The very young child could very well have internalized the system of a second language which would not be reflected in his performance on selected test items, while the eleven year old would likely have learned what was expected of him and excel on a test of performance.

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[1] Penfield, op. cit.

When Has a Learner Learned a Second Language

Katz[1] believes that a fundamental question about one's language ability is what makes up his ability to communicate with others in that language. The basic fact is that speakers can understand indefinitely many sentences never before encountered by them. Almost every sentence encountered is heard for the first time. A person could not be credited with mastery of a foreign language if he is only able to understand those sentences which have previously been taught. The test of fluency is whether he can understand sentences that he has not been taught.

According to Corder[2] a learner's errors, if they are consistent, are evidence that he is using a system of language, whether the system is right or wrong. His errors are significant to the teacher in that he can determine how far toward the goal he has progressed and how much remains for him to learn. His errors are significant to the researcher in that they provide evidence of how language is learned, and perhaps what procedures the learner is using in his discovery of the language. But the errors are most important to the learner himself for making errors is a device the learner uses, or may use, in order to learn.

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[1] Jerrold J. Katz, "Mentalism in Linguistics," in *Psychology of Language*, pp. 73-85.

[2] S. P. Corder, "The Significance of Learner's Errors," *International Review of Applied Linguistics in Language Teaching*, V (November, 1967), 161-170.

> It is a way the learner has of testing his hypotheses about the nature of the language he is learning. The making of errors then is a strategy employed both by children acquiring their mother tongue and by those learning a second language.[1]

Dunkel[2] discusses the elements of trial and error. He says that a child learning to imitate sounds he hears is continually in the process of trial and error. The trial and error method is also apparent in other linguistic matters. A child becomes observably frustrated when he wants to say something and has not the verbal equipment to say it. When he sees he is not getting his idea across, he will try first one way then another. He learns when he has successfully communicated.

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[1] *Ibid.*, p. 167.

[2] Dunkel, *op. cit.*, p. 25.

Theories of Testing Procedures and Test Making for Young Students Learning English as a Second Language

There is a disturbing lack of adequate oral language tests. Perhaps it is an impossible task to develop a comprehensive oral language test in view of the various purposes for which such a test might be put. A test useful in one situation may be useless in another.[1] The current study deals only with productive oral language, and a search of the literature shows there has been little contribution by linguists or educators to testing procedures related to productive oral language.

Examples of Existing Oral Language Tests

Ott-Jameson Oral English Proficiency Test: This test is constructed in two parts, each prerecorded on a tape cartridge. The first part attempts to measure phonology.[2] The student's task is to mimic a modeled sentence. For each sentence a predetermined phoneme is the locus of evaluation. As an example the first item deals with /b/ and /v/ which appear in three different sentences. The evaluator is concerned only with this phoneme and the response is evaluated as to correct, minimum change of phoneme, or neither. The selection of the phonemic items to be tested are based upon contrastive analyses of adult language. The second portion[1] of the test deals with fluency analyses. Prerecorded questions are designed to elicit three levels of speech, literal, inferential, and imaginative. Each question is spaced with a limited amount of time, and since the questions are unrelated to each other, it appears to penalize the thoughtful, reflective child.[2]

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[1] A. E. G. Pilliner, "Subjective and Objective Testing," in Language Testing Symposium, A Psycholinguistic Approach, Alan Davies, ed. (London: Oxford University Press, 1968), pp. 19-36. Hereafter, this book is referred to as Language Testing Symposium.

[2] Jameson, op. cit.

Language Cognition Test (LCT): This is a test specifically designed for educationally disadvantaged school beginners. The rationale behind the test is that unless the teacher knows specifically what the deficiencies are in language and where to begin, then it is almost impossible for school personnel to plan a systematically sequenced program which will have real appeal and be appropriate for the children for whom it is intended. This test is administered on an individual basis and is composed of two parts, The test is available both in English and Spanish. The first part is "Spontaneous Language." The child is handed an object like a ball, for instance, and asked to tell everything he can about it. His responses reveal basic types of sentence patterns, transformations, verb forms, and concepts and relationships. The child is shown a picture of an action such as a child hugging a pair of new shoes. He is asked to tell a story about the picture. His responses are evaluated in the light of his mastery of the language plus time sequence relationships and cause and effect relationships. The more he can fulfill the task provided for him, the higher he scores. In some cases he may be able only to tell what is in the picture, in which case he scores low and his deficiences noted. Part 2 of the test deals with methods of thinking, and its purpose is not to measure language.

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[1] Ott, *op. cit.*

[2] Pauck, *op. cit.*

Stemmler[1] says that if children are expressing themselves largely in one-word sentences, fragments, and kernel sentences, then they are manifesting what are essentially labeling behaviors. A program should be designed to build toward increasingly more complex language structures and cognitive operations.

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[1] Anne O. Stemmler, "The LCT, Language Cognition Test Research Edition--A Test for Educationally Disadvantaged School Beginners," *TESOL Quarterly*, I (December, 1967).

Illinois Test of Psycholinguistic Abilities:[1] This test is designed to identify psycholinguistic abilities of English-speaking children between the ages of two and one half and nine. Authors of the test emphasize that the instrument is diagnostic rather than classificatory. There are nine subtests, but the only part dealing with oral language production of spontaneous language is the ninth which is called Vocal Encoding. An example of a test item is that a student is asked to describe a simple object verbally, e.g., block, nail.

Buros' 6th Mental Measurement Yearbook:[2] A perusal of this book revealed no tests of oral language proficiency. The tests listed, such as the Arizona Articulation Proficiency Test, Diagnostic Methods in Speech Pathology, the Houston Test for Language Development, etc., are specifically designed for clinical diagnosis of the speech of handicapped English-speaking children. The other English language tests are designed for advanced students of English and are geared to reading and writing rather than oral speech.

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[1] Paul Weener, Loren S. Barritt, Melvyn I. Semmel, "A Critical Evaluation of the ITPA," Exceptional Children, XXXIII, (February, 1967), 373-380.

[2] O. K. Buros, ed., The 6th Mental Measurement Yearbook (Highland Park, N. J., Gryphon Press, 1965). English: Speech, p. 602ff, Vocabulary, p. 610ff; Foreign Languages, p. 632ff; English, p. 638ff.

Purposes for Oral Language Tests

Pilliner[1] states that in testing a person's pronunciation, it would be sensible to engage him in conversation and listen, but if the topic is out of his realm of experience, then the conversational situation becomes a test of vocabulary rather than one of pronunciation. The purpose of a testing instrument is to reflect differences in the attributes concerned which are presumed to exist among the subjects and that the extent to which a single subject manifests the attribute becomes meaningful only in relation to the corresponding manifestations by others.

In testing a language as directly as possible one is still faced with choices between integrated skills and separate elements.[1] It is impractical simply to test separate sounds, and in a general test of auditory comprehension there is a choice of testing the element of speaking or listening, or both. In deciding exactly what is to be tested and therefore what skills are to be stressed, it is the purpose of the test which determines the selection and methods.

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[1] Pilliner, *op. cit.*

According to Carroll[2] the extent to which a test of proficiency measures specific competencies depends on the purpose of the test. If the purpose is diagnostic, then more attention should be given the specific dimensions of language. If the purpose of the test is a generalized overall assessment of proficiency, then an integrated test of performance is appropriate. Carroll feels that productive and receptive skills must be tested separately because they are less likely to be highly correlated in a second language than they are in the native language.

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[1] Robert Lado, Language Testing, New York: McGraw Hill Book Co., Inc., 1964. Hereafter, this work is referred to as Language Testing.

[2] John B. Carroll, "The Psychology of Language Testing," Language Testing Symposium, pp. 46-70. Hereafter this article is referred to as "Psychology of Language Testing."

Criteria for Test Making

The criteria of proficiency in spoken language, according to Perren[1] should not be abstracted from a theoretical construct of a language system, but rather from a practical analysis of actual speech. He claims that efficient tests could help language teaching more at the present time than almost any other factor. Perren goes on to say that competence in a second language must ultimately be judged by intelligibility and communication.

> But intelligibility is not merely the production of intelligible sounds in a conventional order; it depends on a situation which includes a particular listener. The meaning of what is said must be the final criterion, and it can only be judged by reference to a context of situation and audience. A learner may, for example, be able to say the sounds of English recognizably, and even combine them into words and sentences with appropriate prosodic features of stress and intonation, according to recognizable patterns, but the real test of whether he can speak the language is whether he can say something which is understood by the listener as relevant to a particular situation.[2]

The skills learned in a foreign language, i.e., speaking, listening, reading, and writing, can be studied and described separately, yet they rarely occur separately in language. The levels of attainment of each skill will be different and testing will introduce the four variables to find the ability to speak the foreign language. Translation is a fifth skill which must be tested separately.[1]

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[1] G. E. Perren, "Testing Spoken Language: Some Unsolved Problems," Language Testing Symposium, pp. 107-116.

[2] Ibid, p. 112

Testing the situation should not be confused with testing the language. Each language has a culture, a group of unique situations of its own and, of course, each language has within it situations and events about which even native speakers would find fluency difficult. There are situations where no language is necessary to understand what is meant. There is no assurance language has been tested when a situation has either been understood or not understood. A situation approach that does not specifically test language elements is not effective and has only the outward appearance of validity.[2]

Dunkel[3] implies that language speaking ability is not merely being able to read or to imitate, but to produce language for one's self. Lado,[4] while assigning value to the various dimensions of language, supports this view by saying that syntax should be given priority in testing.

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[1] Lado, Language Testing.

[2] Lado, Language Testing.

[3] Dunkel, op. cit.

[4] Lado, Language Testing.

Quantitative measures devised prior to 1942 are reviewed by McCarthy,[1] but they concern only early native language acqusition and the general conclusion drawn is that the child's quantity or output of language increases with age and accompanying expansion of language facility. It might be inferred from this review that the actual quantity of speech produced by second-language learners indicates growth in the new language.

Carroll[2] describes language as a set of interrelated habits, but he modifies this definition by saying that language users' habits rarely concern highly routinized sequences of "memorized" utterances. This supports a previously described theory that analogy and generalization from the "memorized" patterns must somehow be assimilated by the user. There are many language habits which may be elicited and measured with some degree of accuracy. Isolated sounds can be elicited by simply asking a child to pronounce a word with that sound in it. Whether or not it is the correct sound is subjective judgment to be sure, but neverthless, any native speaker could find the sound either acceptable or unacceptable.

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[1] McCarthy, op. cit.

[2] Carroll, "Psychology of Language Testing."

If the purpose of the test is to find out if a child knows the meaning of a word, the child can be asked to select the correct definition from an array of answers. But the actual manifestation of linguistic competence is extremely difficult to measure. The tester must make a distinction between performance, which might be parroting of memorized phrases, and competence, which would be the ability to generate his own sentences. Performance naturally is a part of competence, but only inferences as to competence can be made from performance, and performance reflects the strengths of the habits, the rapidity of responses based upon it, and the extent to which it resists interference from other habits.

In other words, Carroll points out that competence cannot be tested in any direct sense. Individual differences in language competence are many. A person who has competence in one part of the vocabulary may not necessarily have competence in vocabulary in other areas. He will not necessarily have equal competence in phonology or syntax of the language. A child's competence in a language must be measured by considering each particular habit belonging to that language, for it is possible that competence in one dimension of the language may have developed independently of the others. Therefore, Carroll states that "as a practical matter, however, it would be impossible to attempt the assessment of each particular habit in a language; we can only sample from the array of possible habits."[1]

While Carroll distinguishes between competence and performance in language, he nevertheless concedes that linguistic performances depend crucially upon underlying competencies and that performance cannot be expected when the underlying competence is absent. From a practical point of view language competence tests measure only integrated performance based on competence. Carroll claims that a general test of proficiency in a foreign language is often found to yield just as good validity when its items are complex, each drawing from a wide sample of linguistic abilities, as when each item has been designed to test competence in one specific feature of the foreign language.

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[1] Ibid, p. 51.

Carroll feels that productive and receptive skills must be tested separately because they are less likely to be highly correlated in a second language than they are in the native language.

In the matter of meaning, Ingram[1] asserts that meaning does not exist independently of other levels of language and cannot be taught or tested in isolation. However, if the tester's purpose is to assess general language competence, then the items must be contextualized. Single word items are time saving, which is a factor to consider in administratively practical tests; however, contextualized items, though brief, will increase the reliability and validity of a language test. An example[2] of a contextualized item, and one which is not, is presented by Ingram:

Knocked down	He was knocked down late last night
a ( ) struck to the ground	a ( ) struck to the ground
b ( ) beaten smooth	b ( ) beaten smooth
c ( ) hammered in	c ( ) hammered in
d ( ) flattened	d ( ) flattened

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[1] Elizabeth Ingram, "Attainment and Diagnostic Testing," Language Testing Symposium, pp. 70-98.

[2] Ibid, p. 90

Ingram makes two generalizations which she claims are absolutely safe.

> (1) The more contextualized a test is, the less diagnostic it is, and
>
> (2) the more contextualized a test is the more reliable it is, therefore, the greater its chances or working near its true validity.[1]

There is no objective technique for evaluating a student's ability to express himself in spoken English. Some things can be measured accurately and objectively, such as time and distance, but language production cannot be scored in this way, and samples of speech have to be judged as good enough or not good enough to be assigned a particular rating.

Wilkinson[2] has set out a list of suggested criteria for Oral English Tests. While he is concerned only with native speakers, the following criteria might well be applied to oral English tests for nonnative speakers.

> (i) Do they set out to test the kind of spoken English which under normal circumstances, the candidate will need to use?

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[1] *Ibid*, pp. 94-95.

[2] Andrew Wilkinson, "The Testing of Oracy," *Language Testing Symposium*, pp. 117-133.

(ii) If not, is there some justification for including them?

(iii) Are the tests such as to have a beneficial "washback" upon teaching?

(iv) Are they reliable?

(v) Are they valid?

(vi) Are they administratively practicable?[1]

Wilkinson claims that the first problem in designing a test of oral expression is to select an appropriate speech situation. Example of types of testing situations suggested by Wilkinson are (1) reciprocal speech situation which is simple conversation; (2) group discussions; and (3) formal speeches. Marking schemes include voice, content, delivery, fluency, stabilizers (utterances such as er-er, m-m-m, you know . . .) and reciprocity (relationship with listener). Only the three latter schemes would be immediately practical to adaptation to a proficiency test for non-English speakers. This would require a panel of judges or observers who make judgments as to good, fair, or poor. The difficulty of administering and scoring such a test would lie in the time element and the subjectivity of the evaluation. Wilkinson has been involved in an experiment conducted by Bernard Bryon for the East Suffolk NATE in which close-circuit television was used to assess a group test. Perhaps in this device lies an answer to the heretofore impossible task of administering an oral language test in any way other than individually.

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[1] Ibid, p. 123

Ingram[1] speaks of job sampling as being the only technique available for finding out how good people are at writing essays. The validity of the sample is assumed, and the task then is to improve the reliability of the judging. One might make the same analogy with productive speech. The best that can be done is to elicit a sample of spontaneous and original speech, and assume that it is representative of the subject's ability, thereby assuming the validity of the test.

Davies,[2] in speaking of validity of an oral language test, implies that test makers must be concerned with attitudes toward validity. That is, the testmakers must be flexible in their efforts to make the test measure what it is intended to measure. Only estimates can be made of the validity of an oral language test. One way in which to estimate the validity of an oral language test, is to compare the results of the tests with what the teachers of the pupils think their proficiency rating should be when compared to other members of the class.

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[1] Ingram, op. cit.

[2] Alan Davies, "Introduction," Language Testing Symposium, pp. 1-18.

Establishing validity for a spontaneous language test is questioned by Mackey[1] who says that a skill is tested by its use. The best way to see whether a person can use a language is to get him to use it. Such tests are easy to give; however, Mackey warns the testmaker that on such a test a student may reveal only what he wants to reveal, since he is not required to include anything on which he might make a mistake. He may avoid sentence structures and vocabulary of which he is unsure. On the other hand, an analytic type of test which aims at breaking down a skill into its elements in order to test one at a time, can be limited to what the tester wants to know. Errors can be analyzed and their causes determined, moreover an analytical or diagnostic test can be designed in such a way as to be more objective than can a test eliciting spontaneous language.

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[1] William Francis Mackey, Language Teaching Analysis (Bloomington: Indiana University Press, 1967), pp. 403-418.

Summary

A review of the literature revealed the following information relevant to the study. Learning one's native language follows the same pattern the world over. It is assumed by linguists that children have an inherent instinct to vocalize and sounds and patterns of sounds appropriate to the native language are learned through reinforcement of those sounds and sequences peculiar to the language. A child makes a neuronal record of the concept named and a neuronal record of the word. He then establishes an automatic reflex connection between the two.

Learning a second language depends largely upon two factors. First, the age of the learner determines how he learns it. If he is very young, under seven or eight years old, he is likely to learn a second language in much the same way he learns his mother tongue. Older children and adults seem to learn quicker and more effectively by analogy and generalization. The second factor affecting second language learning is the geographic location where the person learns it. A basic tenet subscribed to by linguists is that opportunities must be provided for extensive practice by the student and an assurance that instruction will continue.

While motivation is present in learning a native language, it is concealed by the nature of the environment. In other words a small child will learn his native language from exposure to it when he realizes that proper responses will control the behavior of those who can satisfy his needs. Motivation is intrinsically necessary when learning a second language, because the student must make a conscious effort to develop communication skills in a second language. The will to do so determines his success.

There is a great need for tests which will measure oral langauge competency. There is no way to measure language proficiency directly. One can only sample from a student's performance and make assumptions about his competence. For a general assessment of language, samples of spontaneous speech appear to be the best vehicle. For diagnosis of language deficiencies, tests which include the various components of language are best. Test makers should consider the following criteria for a language test important: A test should test the kind of English which under normal circumstances the student will need to use. A test should have a beneficial "washback" upon teaching. A test should be valid, reliable, and administratively practicable.

CHAPTER III

DESCRIPTION OF RESEARCH DESIGN, PROCEDURES, AND DATA ANALYSES

The design of this study was formulated to determine the effectiveness of intensive oral-aural language training in English and Spanish on oral language proficiency in English. A comparison by means of an analysis of variance was made between the LCE, LCS and Control groups. No covariables were included in the analyses because the emphasis rested with oral language production *per se*.

Scores indicating I.Q's for the population studied were considered invalid in light of the fact that there are no measuring devices which can adequately measure I.Q. for culturally deprived children. The following quote supports this assertion:

> Intelligence, performance, and ability testing all tend to have some kind of cultural bias related to them. It is either a language barrier, a test skill inability, a lack of sophistication and understanding of what the culture of the school anticipates, lack of parental and peer motivation, or ethnic affiliation, which retards the full response and required motivation for school success. These factors tend to

> restrict Mexican-Americans from performing adequately in school generated stress situations.[1]

The variable of sex was not considered relevant to the purpose of the current study, as the principal aim was to measure group achievement in the production of the English language.

The teacher variable for the experimental groups was controlled in part by virtue of the fact that all the subjects had been exposed to different teachers each year, all of whom had had in-service training in conducting the experimental programs. The Control group was selected randomly from six classrooms, thus the teacher variable in the Control group was controlled in part through the randomization of the students.

Description of the Sample

Experimental Groups, LCE and LCS: When the original project was begun in the fall of 1964, there were nine schools involved. Twenty-eight classrooms participated in the project. Most of the students were from families whose average yearly income was under $3,000 and whose native language was Spanish.[1] By the beginning of the fall term in 1968 the following count comprised the number of pupils who had had continuous treatment:

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[1] Herbert B. Wilson, Evaluation of the Influence of Educational Programs on Mexican-Americans, University of New Mexico at Las Cruces, April, 1968.

	Grade 5		Grade 4*	
	LCE	LCS	LCE	LCS
Barkley School	1		13	1
Brackenridge School	7	4	32	5
Carvajal School	14		10	13
Crockett School		29	15	
Johnson School	1		10	10
Ogden School	11		45	
Totals	34	33	125	29

*These students were not in the project during the 1964-65 school year.

There were 125 students who had received continuous treatment in the fourth grade LCE group, but in order to provide a comparable sample group with the other three treatment groups a random selection of the students in this cell was made in order to reduce the size. The number of students in this group was 27.

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[1] Horn, op. cit.

The total number of students having continuous treatment and the location of the classrooms of which they were members were supplied the investigator by the San Antonio Independent School District Development and Dissemination Center. The original sample size, including the Control groups, was 186 subjects. During the testing period, however, it was found that five had transferred out of school and 18 were absent on the testing days. Of the 168 recordings obtained, seven were either substandard recordings or had not recorded at all. This reduced the completed sample size to a total of 161 clearly recorded tape cartridges. The difference in the sample size was not deemed sufficient to warrant returning to the schools for retesting.

Control Group: The control group was randomly selected from the fourth and fifth grades at Bowie Elementary School at the request of the San Antonio Center. The population of Bowie School is similar to that of the schools using the experimental treatments. No intensive language training was administered at this school. It is possible that some members of the control group classes had transferred from one of the experimental classes sometime during the past four and five years; however, in view of the fact that there are three sections of fourth grade and three sections of fifth grade at Bowie School, and a random selection had been made of thirty students from each level, it was felt that the control group was adequately removed from the experimental groups in order to give a more valid comparison.

Development of Instrument Used

Phonology: In November, 1968, a commercially prepared review lesson, designated as Test 6,[1] was considered for use in this proposed study. Review of the materials disclosed that Test 6 is a culminating lesson for a set of materials designed to teach standard English to linguistically different children.

The test was composed of a film strip accompanied by a prerecorded series of modeled sentences. The pictures had been lifted from the five previous instructional film strips with the intent of including all troublesome phonemes for nonstandard English speakers. It was discovered that the test gave the investigator a quick relative check on phonological skills of elementary school children.

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[1] Gloria and David Beginning English, Series No. 20, Test 6, Language Arts, Inc., 1205 West 34th St., Austin, Texas 78705.

According to a representative of Language Arts, Inc., the test has been used with approximately 1500 children including Negroes and Puerto Ricans in the North, Navajoes in New Mexico, Spanish-speaking children in San Antonio and the Rio Grande Valley, and most recently with the white Appalachian children in West Virginia. It is claimed that the test yielded astonishingly consistent results which appear to indicate that there are only a limited number of phonemes restricted to any one ethnic group.

Test 6 is made up of twenty color pictures on a film strip. The pictures appear to be effective in establishing a situation of interest to most children from grades K-8. The pictures tend to take the children's minds off conscious language resulting in answers in their natural language. In this regard, most writers have scrupulously avoided asking children to mimic words in isolation to test for phonology, for fear that immediate imitation might occur which would fail to reveal habitual faulty sounds.[1]

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[1] McCarthy, op. cit.

Because of the qualifications noted in Test 6, it was adopted as the phonological portion of the oral language test to be used in San Antonio. This instrument has 616 phonemes in the 36 sentences used, which appeared to give a comprehensive coverage of English phonemes by which a raw score of gross deviations could be attained. The task of the subject was to mimic the model as nearly as possible.

Intonation: The second component of language considered was intonation as mimicked by the subject. It was felt that either the subject repeated with acceptable intonation indicating that he knew what he was saying, or he did not.[1] The same responses obtained for the phonology portion of the test were evaluated for intonation.

Fluency: Phonology and intonation alone were not considered sufficient to constitute a general measure of total language. For this reason a fluency section was devised. In order to keep the test materials consistent, and relying on the qualifications of Test 6, another film strip[2] using pictures of the same children was selected.

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[1] Conference with A. A. Hill, January, 1969.

[2] Gloria and David Spanish Intermediate, Series No. 60, entitled "Saturday's Activities," Language Arts, Inc., 1205 West 34th St., Austin, Texas 78705.

This color film strip consisted of twenty pictures, in which the children from Test 6 had grown to eleven or twelve years old. It was felt that this context would have certain appeal to all children and the continuity maintained throughout the film strips was thought to be a valuable asset in eliciting spontaneous speech from children.

Pilot Testing

Fluency: It was impossible to predict with certainty whether or not the picture stimuli of the Intermediate Series would elicit a continuous flow of spontaneous speech for the fluency portion of the test. Therefore a pilot test was conducted in a semirural elementary school using eleven subjects consisting of fourth and fifth grade native Spanish-speakers. The same pilot test was also given to ten children of similar language background at an urban elementary school. It was found from the pilot study that after a prerecorded explanatory introduction (see Appendix A), the subjects talked freely about the pictures.

Twenty frames on a ten-minute film strip were used in the pilot study, and spontaneous language was obtained with remarkable constancy. Each picture remained on the screen for thirty seconds. It was noted from the pilot test transcriptions that on the first five frames, which began a continuous story of a family's activities on Saturday, that the subject's fluency was the same level as it was on the entire twenty. That is, if he spoke a great deal about the first five pictures, he was still speaking at the same rate about the twentieth picture. Thus it was decided to limit the fluency section to the first five frames for economy of administration and scoring time. Administration time for the twenty-frame film strip was twelve minutes, and scoring and transcription time required an average of an hour per child. Cutting the fluency section to the first five frames reduced the administration time to three and one-half minutes (including the prerecorded instructions) and scoring and transcription time to an average of twenty minutes per child.

Supportive Measure of Fluency: A second pilot test was then run in order to find a supportive measure of fluency. Sounds from the fluency portion of the cartridge tapes from the pilot study were fed into a Sanborn

Recorder[1] which reproduced graphically the number of seconds used for speaking. The Sanborn Recording System Model 297 is a two-channel general purpose recorder with a preamplifier which records electric signals. All measurements are recorded in a true rectilinear coordinate against a linear time base. A timer/marker trace is provided with direct-writing by a hot wire stylus at the end of a writing arm on plastic coated paper. The timer/marker traces at the bottom edge of the recording to record one-second timing pulses.

There is a series of five push-button switches to select the desired paper drive speed. For purposes of this pilot test, the recorder was operated at five centimeters per second so that each block of five lines represented one second, and it was then possible to count with reasonable accuracy the amount of speaking time. (See Appendix B.) An intercorrelation analysis[2] was done to determine if the two scores on fluency were additive. The correlation was .94 between the number of words spoken in the 150 seconds allotted and the number of seconds used in verbalization. In view of such a high correlation, it was assumed that these two measures of fluency, word count and seconds of speech, were measuring the same thing. Therefore, it was decided to omit the Sanborn recorded tapes which indicated the time used speaking and to use only the word count as a variable in the total language score. Using the three components of language, phonology, intonation and fluency as measured by word count, it was considered that the Gloria and David Oral Language Proficiency Test, hereafter called LPT, was adequate for comparative measure of growth in these dimensions of oral language.

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[1] Sanborn Company, 175 Wyman Street, Waltham 54, Massachusetts.

[2] Q. McNemar, Psychological Statistics (New York: John Wiley & Sons, Inc., 1962), pp. 109-168.

Administration of the Tests

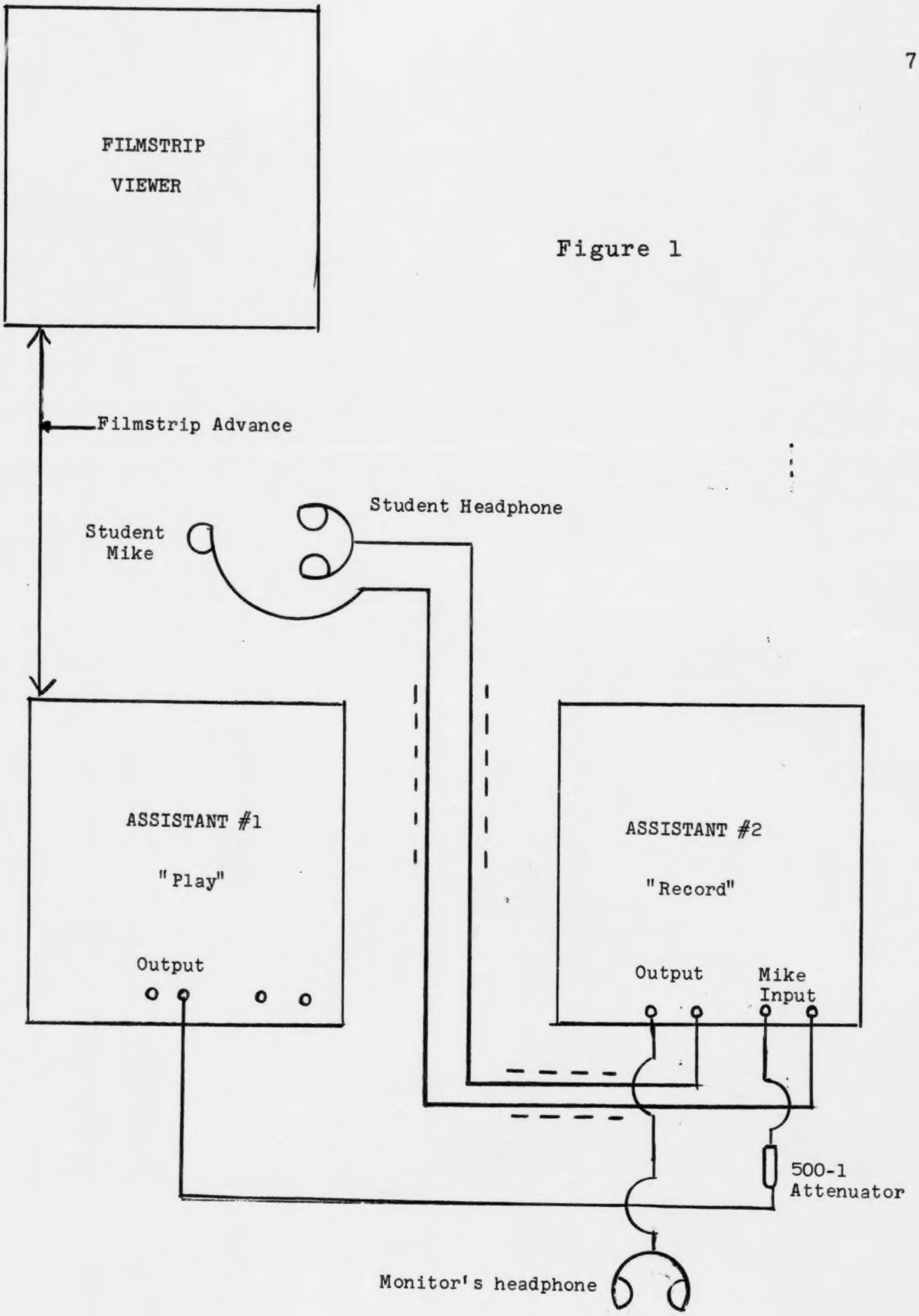
In January, 1969, equipment was transported to San Antonio and testing was begun on the preselected subjects. The equipment was designed specifically for use with the Gloria and David instructional materials. To reduce the administration variable, the equipment setup had to be carefully planned and sequenced. A design of the suggested equipment arrangement and the special interconnections necessary to provide it were supplied through the cooperation of Language Arts, Inc. of Austin.

The final arrangements permitted test administration with no wasted time and with no variation in the testing procedure, since complete instructions were contained in the prerecorded master tape cartridge. (See Figure 1.) Thus every child received identical test treatment. The remarkable efficiency of the arrangement was demonstrated by the fact that 161 clearly recorded student test cartridges out of 168 individual administrations were obtained. For unexplained reasons, the other seven student recordings were not audible for scoring purposes. It is assumed that patch-wire connections worked loose from time to time, or that the "off" button was accidentally triggered during testing.

The following description of the mechanical arrangement was supplied by Gib Devine, President of Language Arts, Inc. and was implemented by the investigator during testing in San Antonio:

> The equipment employed included two Language Arts "Assistants" (record and playback machines), an automated filstrip viewer, and an earphone-microphone headset. Because the recording of each child was required to contain the test as well as responses, and because time did not permit prerecording the test material on each cartridge, a special machine arrangement was required. The equipment was set up in the following manner:

Figure 1


FILMSTRIP
VIEWER
Filmstrip Advance
Student Mike
Student Headphone
ASSISTANT #1
"Play"
Output
ASSISTANT #2
"Record"
Output
Mike
Input
500-1
Attenuator
Monitor's headphone

> The film strip viewer and the headsets were placed on a table. Behind the student table the two record and playback machines were placed side by side on another table. The first machine was employed only to play the prerecorded test cartridge and to change the accompanying filmstrip pictures at the predetermined time. This filmstrip had been looped so as to be in a synchronized position at all times. A patch-cord was inserted into the back of this machine to activate the automated filmstrip viewer.
>
> A patch-cord with a 500 to 1 attenuator carried the signal from the output of the first machine to one mike input of the second. The earphone jack of the student's headset was placed into the "output" socket. The student's microphone jack was inserted into the other mike input socket of the second machine. The student therefore heard the test material and his own response on his earphones. (See Fig. 1.)

With the first machine in "playback" mode and the second machine in "record" mode with predetermined playback and record volume settings checked for accuracy, testing was begun.

When the child entered the room he was directed to the proper table and asked to sit facing the filmstrip viewer. (See Appendix C.) To put him at ease, he was asked if he had ever worn headphones, and after the headphones were placed on his head, he was asked if he were comfortable. No other remarks were addressed to the student. The administrator then returned to the table behind the student and began both machines simultaneously. As each test was being administered it was monitored by the investigator. A few of the subjects did not repeat the modeled sentence at the beginning of the test, probably because they had not understood the directions clearly. When this occurred, the instructions on the phonology section were clarified further for the student by the administrator. On the fluency section, prompting of any kind was deemed inappropriate: therefore no remarks were addressed to the subjects during this portion of the test. Only two students out of 161 failed to respond to the fluency section directions.

Sites provided for testing by the schools varied. In each case, however, the facilities were such that the above described arrangement could be set up. Each room provided for testing was isolated from distractions such as classroom noises, hall noises, and visible activities of other children. Despite the fact that all children were not tested in the same location, the requirements which were preestablished were met in every case.

Scoring of Tests

Phonology: The delay in responding to the phonology section by some of the students was compensated for by disregarding the first four sentences modeled in every case, thus only thirty-six of the forty sentences were scored.

The investigator evaluated the tapes individually by listening to each cartridge through a set of headphones. A scoring sheet was provided for each child (See Appendix D), and as the student repeated each modeled sentence, gross errors were circled by the investigator. Prior to collecting the data from the tapes, seven tapes were played through a loud speaker and the investigator and one other person[1] evaluated them. The number of errors marked by each evaluator was approximately the same. While this reliability check is admittedly extremely small, it did serve to establish that the gross errors being heard by the investigator during the data evaluations would likely be heard by another lay listener.

The writer is not a trained phonetician, therefore such deviations as duration of vowel sounds, directional glides, transitional pronunciations, etc. were disregarded and only those deviations which would be apparent to a lay listener such as a classroom teacher, or those deviations which would cause a phonemic difference were considered errors. The deviations which appeared to be in a transitional form reaching for the desired pronunciation were counted as "correct." Only gross deviations were counted "wrong." After the deviations were circled and counted the total number was subtracted from the total number of phonemes in the instrument to compute a raw score. The distribution of the phonemes in the instrument is shown in Figure 2.

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[1] Gib Devine, President, Language Arts, Inc., 1205 West 34th Street, Austin, Texas 78705.

Absent in the test are /v/, /ž/ (as in pleasure), /ŋ/, /aʊ/ (as in house) and /oi/(as in boy). Changes in only three or four modeled sentences could give the test a complete coverage of common English phonemes. This deficiency is slight, in the opinion of the investigator, and the comprehensive coverage of an overwhelming majority of English phonemes compensates for the absence of the few which have been omitted.

Intonation: Intonation was evaluated only on the portion of the test in which the subjects mimicked the modeled sentence. A four point scale was assigned each sentence on the following basis:

4 points - close approximation to modeled intonation
3 points - acceptable intonation

FIGURE 2

DISTRIBUTION OF PHONEMES IN INSTRUMENT

/b/ b - 15

/p/ - p - 5

/d/ - d - 35

/t/ - t - 28

/g/ - g - 20

/k/ - k - 23

/č/ -ch - 4

/v/ - v - 8

/f/ - f - 6

/ð/ -th - 22 (voiced)

/θ/ -th - 6 (voiceless)

/h/ - h - 32

/z/ - z - 30

/s/ - s - 16

/š/ -sh - 13

/m/ - m - 7

/n/ - n - 32

/ɔr/ - or - 21

/ər/ - er - 15

/l/ - l - 32

/w/ - w - 8

/r/ - r - 36

/i/ - e - 18 (as in eat)

/I/ - i - 41 (as in sit)

/ey/ - a - 19 (as in bay)

/æ/ - a - 26 (as in cat)

/ʊ/ - u - 1 (as in put)

/ə/ - u - 49 (as in but)

/a/ - a - 11 (as in father)

/u/ - u - 10 (as in blue)

/o/ - o - 30 (as in coast)

/ai/ - i - 3 (as in bite)

/ar/ - ar - 3 (as in car)

/ɛ/ - e - 10 (as in bed)

2 points - unacceptable intonation

1 point - no response

The criterion for judging intonation as acceptable was that if the subject repeated the sentence so that it was obvious that he knew what he was saying then he was given credit for four points. In a few of the modeled sentences, the model stressed a particular word which gave a slightly different meaning, e.g., "David has a brush for HIS hair." If the child missed the special stress, yet repeated the sentence with a meaningful intonation, he was given three points. Unacceptable intonation was assigned to a subject's performance if he garbled the sentence, or appeared to be trying to remember only isolated words. It seemed in this case that the subject obviously did not understand what he was saying. Assigning four points to each of the thirty-six sentences (the first four were omitted), a total of 144 was established as a perfect score on intonation. A raw score was computed by adding the value assigned each response by the investigator.

Fluency: The investigator transcribed each pupil's spontaneous language from cartridge to paper. The fluency section of the test was scored by simple word count which constituted a raw score. The only requirement was that the subject's speech focus on the content of the stimuli. This requirement was met in every case.

Analyses of the Data

A separate series of analyses of variance was done for each grade level, and a correlation analysis was performed for all students combined. The variables analyzed were the following four measures of English language: (1) phonology; (2) intonation; (3) fluency (word count); and (4) total language score, a composite of the other three. A fifth variable, ratio of words per second, was also included in the analyses, but results showed it to be statistically equivalent ($r = 1.0$) to the word-count measure, so it was not treated in the statistical analyses.

ANOVAR and FACTOR, statistical computer programs from the Edstat-V Library at The University of Texas Computation Center, were used to produce the analyses of variance and the correlation analysis, respectively. These two programs are documented and references to the statistical methods which they implement are also given by Veldman.[1]

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[1] Donald J. Veldman, FORTRAN Programming for the Behavioral Sciences (New York: Rinehart, Holt, and Winston, 1967).

For use with the programs, the data were punched onto tab cards.

To test hypotheses one through eight, a separate series of single-classification analyses of variance[1] was performed for each grade level.

To test hypothesis 9, an intercorrelation[2] matrix was computed using the four language measure of all students in the sample. The next chapter will discuss the findings.

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[1] McNemar, op. cit., pp. 252-287.

[2] Ibid., pp. 109-168.

CHAPTER IV

STATISTICAL ANALYSES OF THE HYPOTHESES

This chapter presents the results of the statistical analyses performed on the data from fourth and fifth grade students in the San Antonio Project during 1968-1969. The discussion will focus on the hypotheses in the order in which they are presented in Chapter I. The intercorrelations among the four language measures will be discussed and an intercorrelation matrix will be presented. The results of an informal validity check on the instrument will be presented and discussed. Due to questions raised from one analysis, post hoc comparisons between fourth and fifth grade control groups were conducted and will be presented and discussed.

Hypotheses

Hypothesis 1: There is no significant difference among the LCE, LCS and Control groups on phonology at the fifth grade level. As indicated in Table 1, the fifth grade subjects who received continuous oral-aural English treatment obtained a higher mean score than either the

TABLE 1

MEANS, STANDARD DEVIATIONS, AND ANALYSIS OF VARIANCE FOR FIFTH GRADE PHONOLOGY SUBTEST, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

Treatment	Subjects	Mean	Standard Deviation
LCE	32	596.61	13.47
LCS	26	594.42	18.91
Control	29	585.38	11.05

Groups Mean Square	Error Mean Square	F-Ratio	Probability
1,092.548	214.023	5.105	.0082

Groups D.F. = 2, Error D.F. = 84.

Spanish or Control treatment groups. The Spanish treatment group mean score is only slightly lower than the English treatment group mean score while the Control group was lowest.

The standard deviations are somewhat inconsistent with the mean scores by treatment. It could be conjectured that the reversal of standard deviations between experimental treatments might be due to the fact that the Spanish treatment is more helpful for some children than others, while the English treatment may not be as helpful for some, but more beneficial for the group as a whole. But in view of the highly significant probability level, based on means and standard deviations and the low means and standard deviations of the control group, the conjecture is highly tentative.

It can be noted in Table 1 that among the three groups on the phonology subtest, mean scores differed significantly at the .01 level of probability favoring the English treatment group. Therefore the null hypothesis is rejected.

Hypothesis 2: There is no significant difference among the LCE, LCS and Control groups on intonation at the fifth grade level. The mean scores obtained by the three groups are extremely close, as can be seen in Table 2. The range of standard deviations is the 4.2 (LCE) to 3.1 (Control) to 2.2 (LCS) points in that order. In view of the limitations of this subtest described in detail later, the essentially equal group mean scores and the nonsignificant probability level, conjecture about these standard deviations is deemed inappropriate.

As would be expected from such mean scores there was no statistically significant differences among the groups. On the basis of this analysis the null hypothesis is accepted.

Hypothesis 3: There is no significant difference among the LCE, LCS and Control group on fluency at the fifth grade level. The mean scores of the three groups are shown in Table 3. It is noted that there is a large difference favoring the Spanish treatment group. The differences between the mean scores of the English treatment group and the Control group is even larger favoring the English treatment group.

The relationship between means and standard deviations is in the same direction (LCS > LCE > Control) indicating the expected relationship among groups in terms

TABLE 2

MEANS, STANDARD DEVIATION, AND ANALYSIS OF VARIANCE FOR FIFTH GRADE ON INTONATION SUBTEST, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

Treatment	Subjects	Mean	Standard Deviation
LCE	32	141.47	4.20
LCS	26	142.31	2.17
Control	29	141.52	3.11

Groups Mean Square	Error Mean Square	F-Ratio	Probability
6.086	11.152	.546	.5869

Groups D.F. = 2 and Error D.F. = 84.

TABLE 3

MEANS, STANDARD DEVIATIONS, AND ANALYSIS OF VARIANCE FOR FIFTH GRADE FLUENCY SUBTEST, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

Treatment	Subjects	Mean	Standard Deviation
LCE	32	148.81	69.77
LCS	26	166.35	86.76
Control	29	116.72	62.75

Groups Mean Square	Error Mean Square	F-Ratio	Probability
17,631.701	5,349.221	3.296	.0406

Groups D.F. / 2, Error D.F. = 84.

of both means and standard deviations. This supports credence in the statistical comparison of treatment groups.

As illustrated in the table differences among the treatment groups are significant at the .04 level which lies within the statistical region of doubt, depending on the position taken by the researcher. On the basis of this analysis the writer is willing to reject the null hypothesis at the .01 but not at the .04 level.

Hypothesis 4: There is no significant difference among the LCE, LCS and Control groups on total language score at the fifth grade level. It can be noted in Table 4 that the Spanish treatment group mean score exceeded the means of the English and Control treatment groups by a sizeable margin, as did the standard deviations. The English treatment group mean score exceeded considerably that of the control.

The relation between means and standard deviations (LCS > LCE > Control) is in the same direction among treatment groups which lends support to the statistical analysis, i.e., those high means had high standard deviations and low means had smaller standard deviations. The difference between the groups is statistically significant

TABLE 4

MEANS, STANDARD DEVIATIONS, AND ANALYSIS OF VARIANCE FOR FIFTH GRADE TOTAL LANGUAGE MEASURE, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

Treatment	Subjects	Mean	Standard Deviation
LCE	32	887.22	78.53
LCS	26	906.92	91.26
Control	29	843.62	66.23

Groups Mean Square	Error Mean Square	F-Ratio	Probability
29,358.561	6,216.931	4.722	.0114

Groups D.F. = 2, Error D.F. = 84.

at almost the .01 level. Therefore, on the basis of this analysis the null hypothesis is rejected.

Hypothesis 5: There is no significant difference among the LCE, LCS and Control groups on phonology at the fourth grade level. It is interesting to note that the Spanish treatment group mean score is highest on phonology at the fourth grade level as is evidenced by Table 5. The English treatment group attained the second highest mean score and the Control group the lowest. The differences in mean scores are slight, especially between the LCE and Control treatments. The standard deviations are also very similar numerically. The table shows that the differences are not significant. Therefore, in view of the .70 level of probability the null hypothesis is accepted.

Hypothesis 6: There is no significant difference among the LCE, LCS and Control groups on intonation at the fourth grade level. As illustrated in Table 6 the spread of the mean scores is extremely small among the groups at the fourth grade level as it was at the fifth grade level. The range of standard deviations is from 4 (LCS) to 3 (LCE) to 2 (Control) in that order. Despite the difference in direction in the standard deviation scores in comparison

TABLE 5

MEANS, STANDARD DEVIATIONS, AND ANALYSIS OF VARIANCE FOR FOURTH GRADE PHONOLOGY SUBTEST, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

Treatment	Subjects	Mean	Standard Deviation
LCE	27	583.96	19.39
LCS	20	587.30	18.12
Control	27	582.67	18.14

Groups Mean Square	Error Mean Square	F-Ratio	Probability
127.236	346.016	.368	.6990

Group D.F. = 2, Error D.F. = 71.

TABLE 6

MEANS, STANDARD DEVIATIONS, AND ANALYSIS OF VARIANCE FOR FOURTH GRADE INTONATION SUBTEST, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

Treatment	Subjects	Mean	Standard Deviation
LCE	27	142.19	3.37
LCS	20	141.05	4.62
Control	27	142.04	2.38

Groups Mean Square	Error Mean Square	F-Ratio	Probability
8.3646	11.9435	.700	.5042

Groups D.F. = 2, Error D.F. = 71.

to the fifth grade sample on this subtest the overall general small spread of scores in both samples appears relatively unimportant in terms of variance. As could be expected the differences between the groups is nonsignificant. In view of the probability reported (P = .50) in the table, the null hypothesis is accepted.

Hypothesis 7: There is no significant difference among the LCE, LSC and Control groups on fluency at the fourth grade level. Table 7 shows that the Spanish treatment group attained a higher mean score than either of the other two groups. The mean score of the Control group was a good deal higher than the LCE mean score.

Although the differences in mean scores appear to be large among the groups, the standard deviations narrow the spread sufficiently to make the difference nonsignificant. Further the descriptive statistics, though nonsignificant, indicate that skewness for the LCE treatment is in the positive direction while for LCS it is in the negative direction. Therefore when considering standard deviations and skewness of the two groups it would appear to be overpresumptuous to speculate that the LCS treatment is superior to the LCE treatment based on mean and standard deviation scores. However it must be mentioned that of all

TABLE 7

MEANS, STANDARD DEVIATIONS, AND ANALYSIS OF VARIANCE FOR FOURTH GRADE FLUENCY SUBTEST, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

Treatment	Subjects	Mean	Standard Deviation
LCE	32	99.70	67.73
LCS	20	130.30	55.57
Control	27	127.30	61.41

Groups Mean Square	Error Mean Square	F-Ratio	Probability
7,198.710	3,887.345	1.852	.1625

Groups D.F. = 2, Error D.F. = 71.

subjects tested at this grade level on this subtest, the only zero score obtained was in the LCE group. This phenomenon may have occurred by chance.

The probability of .1625 tends to substantiate the above speculations. Therefore on the basis of the results of the computations cited, the null hypothesis is accepted.

Hypothesis 8: There is no significant difference among LCE, LCS and Control groups on total language measure at the fourth grade level. It can be noted in Table 8 that the mean score attained by the Spanish treatment group is the highest. The Control group attained the second highest score, though only slightly lower than LCS, and the English treatment group, the lowest. The standard deviations suggest that the spread for LCE is greater than the Control which is greater than the Spanish treatment. However, this may be in part an artifact of the fluency test means and standard deviations previously discussed.

Conjecturing about the means, standard deviations and possible artifact in the fluency test appears at best tenuous in view of the analysis of variance for the total test score. Statistically nonsignificant differences (P = .35) were found. On the basis of this analysis the null hypothesis is accepted.

TABLE 8

MEANS, STANDARD DEVIATIONS, AND ANALYSIS OF VARIANCE FOR FOURTH GRADE TOTAL LANGUAGE MEASURE, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

Treatment	Subjects	Mean	Standard Deviation
LCE	27	829.26	84.42
LCS	20	858.80	70.18
Control	27	855.74	79.19

Groups Mean Square	Error Mean Square	F-Ratio	Probability
6,672.384	6,224.191	1.072	.3487

Group D.F. = 2, Error D.F. = 71.

Hypothesis 9: There is no correlation between the three subscales and total score, i.e., (a) phonology and intonation (b) phonology and fluency as measured by word count (c) intonation and fluency (d) and each subscale with total language score. The intercorrelation matrix was computed using the four language measures as is shown in Table 9. With a sample consisting of both grade levels and a total of 161 subjects, a sample correlation coefficient must be as large as .155 in order to be significantly different from zero at the .05 level of significance, and .183 in order to significantly differ from zero at the .01 level of significance. Five of the six coefficients in Table 9 meet the .01 criterion, while correlation between fluency and intonation meet the .05 criterion for significance. Therefore the null hypothesis is rejected. That is, it may be concluded from this evidence that for each pair of the four measures there is a reliable positive linear relationship in the population from which the data were taken. However, it is important to note that the fluency subtest and total language scores correlate at .96 which suggests that little information would be lost if only the one subtest were used in lieu of the total test as a measure of general language.

TABLE 9

CORRELATION COEFFICIENTS COMPUTED ON ALL STUDENTS IN THE SAMPLE (N = 161), SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

	Phonology	Intonation	Fluency
Intonation	.2213**	----	----
Fluency	.4198**	.1600*	----
Total Language	.6030**	.2870**	.9640**

* P = .05

** P = .01

Validity Check on Instrument Used

In order to run a validity check on the instrument used, a rating form (Appendix E) was sent to each of the schools involved. Each teacher was asked what she thought the proficiency of each student should be when compared to other members of the class. The teacher was asked to indicate her ratings on a rating form. Six of the seven schools responded. Twenty-six different teachers submitted ratings for a total of 143 children.

The total number of scores from each of the four variables of the test administered were ranked from highest to lowest and divided into thirds. A basic 3x3 matrix, augmented by the distribution of treatment groups and grade levels for informal perusal, was drawn. The numerical scores with the appropriate division lines were stated in the horizontal rows. The vertical columns were reserved for the teacher ratings. The ranking sheet submitted to the teachers had three divisions: fluent, moderately fluent, and linguistically handicapped.

The individual score totals were then distributed into the proper cells, which are represented in the lower right-hand corner of each basic cell (see Table 10 for phonology, Table 11 for intonation, Table 12 for fluency, and Table 13 for total score). A Chi Square (Chi Chi)[1] test was run in order to determine the degree of relationship between the numerical scores obtained on the measuring instrument and teacher ratings. It will be noted from the above four tables that there appears to be a highly significant relationship between teacher ratings and the numerical scores obtained from the measuring instrument used in this study on phonology, fluency and total language. However due to the limited four-point range on the intonation test scoring system and the three-point rating system for teachers, the probability level on the intonation subtest (P = .67) is nonsignificant. This outcome is not surprising in view of the limited scoring procedures on both dimensions. Again, the intonation test scoring procedure might be questioned and considered a limitation of the experimental test.

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[1] Veldman, op. cit.

TABLE 10

CORRELATION MATRIX BETWEEN PHONOLOGY SUBTEST SCORES AND TEACHER RATINGS, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

Numerical Scores		Teacher Ratings								
		Fluent			Moderately Fluent			Linquistically Handicapped		
	Group	4th	5th	Total	4th	5th	Total	4th	5th	Total
616	LCE	2	5	7	2	6	8	0	0	0
	LCS	0	5	5	1	9	10	0	0	0
597	Control	3	1	4	1	3	4	0	0	0
	Total			16			22			0
590	LCE	0	1	1	6	3	9	3	1	4
	LCS	1	1	2	3	9	12	0	0	0
587	Control	4	2	6	4	7	11	1	2	3
	Total			9			32			7
586	LCE	1	0	1	6	5	11	2	0	2
	LCS	0	1	1	2	1	3	1	0	1
507	Control	2	3	5	7	7	14	5	3	8
	Total			7			28			11

Chi Square = 16.201
D.F. = 4
P = .0033

TABLE 11

CORRELATION MATRIX BETWEEN INTONATION SUBTEST SCORES AND TEACHER RATINGS, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

Numer-ical Scores	Group	Teacher Ratings: Fluent 4th	Fluent 5th	Fluent Total	Moderately Fluent 4th	Moderately Fluent 5th	Moderately Fluent Total	Linguistically Handicapped 4th	Linguistically Handicapped 5th	Linguistically Handicapped Total
144	LCE	0	5	5	11	2	13	3	1	4
	LCS	0	5	5	4	3	12	0	0	0
	Control	6	2	8	5	7	12	1	2	3
	Total			18			37			7
142	LCE	0	2	2	4	3	7	1	0	1
	LCS	0	2	2	0	3	3	0	0	0
	Control	3	1	4	4	3	9	2	2	4
	Total			8			19			5
141	LCE	2	0	2	2	5	7	1	0	1
	LCS	1	0	1	2	8	10	1	0	1
127	Control	1	2	3	2	6	8	3	1	4
	Total			6			25			6

Chi Square = 2.357
D.F. = 4
P = .6739

TABLE 12

CORRELATION MATRIX BETWEEN FLUENCY SUBTEST SCORES AND TEACHER RATINGS, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

Numerical Scores		Teacher Ratings								
		Fluent			Moderately Fluent			Linguistically Handicapped		
		4th	5th	Total	4th	5th	Total	4th	5th	Total
317	LCE	3	3	6	1	4	5	1	0	1
	LCS	0	6	6	1	6	7	0	0	0
161	Control	7	2	9	2	3	5	1	0	1
	Total			21			17			2
160	LCE	0	2	2	3	3	6	2	0	2
	LCS	1	1	2	4	7	11	0	0	0
101	Control	1	2	3	5	9	14	2	1	3
	Total			7			31			5
100	LCE	0	1	1	11	4	15	2	0	2
	LCS	0	0	0	1	6	7	2	0	2
0	Control	2	0	2	4	7	11	3	4	7
	Total			3			33			11

Chi Square = 29.981
D.F. = 4
$P < .0001$

TABLE 13

CORRELATION MATRIX BETWEEN TOTAL SCORES AND TEACHER RATINGS, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

Numerical Scores		Teacher Ratings								
		Fluent			Moderately Fluent			Linguistically Handicapped		
		4th	5th	Total	4th	5th	Total	4th	5th	Total
1110	LCE	3	4	7	2	3	5	0	1	1
	LCS	0	5	5	1	8	9	0	0	0
893	Control	7	2	9	1	4	5	0	0	0
	Total			21			19			1
892	LCE	0	1	1	4	5	9	2	0	2
	LCS	1	1	2	4	7	11	0	0	0
895	Control	1	2	3	5	7	12	3	1	4
	Total			6			32			6
824	LCE	0	1	1	8	4	12	4	0	4
	LCS	0	1	1	1	4	5	1	0	1
687	Control	2	0	2	5	7	12	3	4	7
	Total			4			29			12

Chi Square = 30.159
D.F. = 4
P < .000001

Summary of Findings

The major statistical findings will be summarized by presenting: (1) fifth grade means, standard deviations and analysis of variance; (2) fourth grade means, standard deviations, and analysis of variance; (3) combined fourth and fifth grade means, standard deviations, analysis of variance, and a post hoc statistical analysis based on a question arising from the combined fourth and fifth grade table; (4) intercorrelation among subtests and total score.

Fifth Grade. In examining the means, standard deviations, and analysis of variance for the fifth grade in Table 14 it can be seen that the fifth grade Spanish treatment group mean score was superior to the English and Control treatment groups on intonation, fluency, and total language score. The English treatment group mean score was superior to the other groups on phonology. The standard deviations for: (1) the intonation subtest are reasonably similar; (2) the fluency subtest and total test score, the standard deviations follow the same directions as the means supporting the credence of the statistical analyses; (3) for the phonology subtest, while direction

TABLE 14

SAMPLE MEANS, STANDARD DEVIATIONS, ANALYSES OF VARIANCE ON FOUR LANGUAGE MEASURES IN THREE TREATMENT GROUPS FOR GRADE FIVE, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

	Phonology	Intonation	Fluency	Total
Means				
LCE	596.91	141.47	148.81	887.22
LCS	594.42	142.31	166.35	906.92
Control	585.38	141.52	116.72	843.62
Standard Deviations				
LCE	13.47	4.20	69.77	78.53
LCS	16.91	2.17	86.76	91.26
Control	11.05	3.11	62.75	66.23

LCE: N = 32, LCS: N = 26, Control: N = 29

	Groups Mean Square	Error Mean Square	F-Ratio	Proba-bility
Phonology	1,092.548	214.023	5.105	.0082
Intonation	6.085	11.152	.546	.5869
Fluency	17,631.701	5,349.221	3.296	.0406
Total	29,358.561	6,216.930	4.722	.0114

Note: For all four analyses, groups D.F. = 2 and Error D.F. = 84.

and variability differ, with standard deviations of the LCS being highest, in view of the high probability level (P = .008) attained through an analysis of variance which considers both means and standard deviations speculation regarding the differences suggests conjecture about differences in standard deviations would be highly tenuous. Among the fifth grade subjects tested there were significant differences on phonology (P = .008), fluency (P = .041), and total language scores (P = .011), but not on intonation (P = .587).

Fourth Grade. The fourth grade Spanish treatment group mean scores indicated a slightly superior performance on phonology, fluency, and total language score. The three groups were essentially equal on intonation. The standard deviations for the phonology and intonation subtests are reasonably similar and support the probability levels based on the statistical analysis. Standard deviations for the fluency subtests appear somewhat large and are inconsistent in direction with the mean scores, especially when the two experimental treatments are observed. However, the standard deviations narrow the spread, and the skewness factor (LCE positively skewed, LCS negatively skewed) considered together substantiate the nonsignificant probability level

(P = .163). Nevertheless, it can be observed that, relatively speaking, the fluency subtest approaches significance much more so than does either phonology or intonation. The standard deviation of the total test score reflects the weighting of the fluency subtest since the rankings and directions of the total test and fluency subtest are the same.

When the means and standard deviations were subjected to analysis of variance there were no significant differences on any of the tests at the fourth grade level. (See Table 15). However, the trend is generally in the direction of the fifth grade sample, i.e., the Spanish group had higher mean scores.

Combined Fifth and Fourth Grade Means and Standard Deviations. Though not originally planned in the design of the study, it was deemed appropriate that the means and standard deviations of fourth and fifth grades be compared for further information. Table 16 presents a treatment by grade level comparison of means and standard deviations for the four experimental tests used in this study.

When this table is perused, the means and standard deviations appeared reasonable and consistent with the general expectations of the study. However, an obvious

TABLE 15

SAMPLE MEANS, STANDARD DEVIATIONS, AND ANALYSES OF VARIANCE ON FOUR LANGUAGE MEASURES IN THREE TREATMENT GROUPS FOR GRADE FOUR, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

	Phonology	Intonation	Fluency	Total
Means				
LCE	583.96	142.19	99.70	829.26
LCS	587.30	141.05	130.30	858.80
Control	582.67	142.04	127.30	855.74
Standard Deviations				
LCE	19.39	3.37	67.73	84.42
LCS	18.12	4.62	55.57	70.18
Control	18.14	2.38	61.41	79.19

LCE: N = 27, LCS: N = 20, Control: N = 27

	Groups Mean Square	Error Mean Square	F-Ratio	Probability
Phonology	127.236	346.016	.368	.6990
Intonation	8.365	11.944	.700	.5042
Fluency	7,198.710	3,887.345	1.852	.1625
Total	6,672.384	6,224.191	1.072	.3487

Note: For all four analyses, groups D.F. = 2 and Error D.F. = 71.

TABLE 16

MEANS, STANDARD DEVIATIONS, AND ANALYSIS OF VARIANCE ON COMBINED FIFTH AND FOURTH GRADE FLUENCY TEST FOR CONTROL GROUPS ONLY, SAN ANTONIO INDEPENDENT SCHOOL DISTRICT, 1968-1969

	Phonology		Intonation		Fluency		Total Language	
	4th	5th	4th	5th	4th	5th	4th	5th
Means								
LCE	583.96	596.91	142.19	141.47	99.70	148.81	829.26	887.22
LCS	587.30	594.42	141.05	142.31	130.30	166.35	858.80	906.92
Control	582.67	585.38	142.04	141.52	127.30	116.72	855.74	843.62
Standard Deviations								
LCE	19.39	13.47	3.37	4.20	67.73	69.77	84.42	78.53
LCS	18.12	18.91	4.62	2.17	55.57	86.76	70.18	91.26
Control	18.14	11.05	2.38	3.11	61.41	62.75	79.19	66.23

Groups Mean Square	Error Mean Square	F-Ratio	Probability
1562.79	3857.65	.405	.5342

Group D.F. = 1, Error D.F. = 54

exception can be noted in the fluency subtest for the control group. If the test were appropriate, and if language growth in English were expected from one grade level to the next, it would follow logically that growth from one grade level to the next would be indicated on the mean test scores.

The particular cells in question show the mean fourth grade fluency score of 127.30 and the mean fifth grade score of 116.72, a regression of over 10.5 raw score points. When compared to a growth of over 49 points for the LCE and over 36 points for LCS the 10.5 loss appeared important enough to warrant further statistical investigation.

A post hoc two-tailed t-test (Program ANOVAR)[1] was used to determine if in fact the apparent exception was statistically significant when means and standard deviations were statistically analyzed. A nonsignificant probability level of .5342 resulted. Despite the apparent regression from fourth grade, the difference was nonsignificant. However, the experimenter feels there may be an unknown artifact involved which could have eluded the statistical analyses.

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[1] Veldman, op. cit.

Intercorrelation of Subtests and Total Score. In the population tested and the data collected there is a significant relationship between phonology, intonation, fluency and total language score; however, the fluency subtest was correlated highly with total language, i.e., .96.

CHAPTER V

SUMMARY, LIMITATIONS, CONCLUSIONS AND RECOMMENDATIONS

The primary focus of the San Antonio Language Research Program which implemented the experimental treatments has been on oral language development. The program inaugurated in August of 1964 provided intensive oral-aural instruction for one hour a day using culture fair science materials. In subsequent years, the content area used as a vehicle for language instruction was expanded to include self-concept and social studies.

The current study endeavored to: (1) determine the effectiveness of two experimental treatments which have been underway for five years in the San Antonio Independent School District; and (2) devise an instrument by which English language proficiency could adequately and efficiently be measured. The experimental instrument containing phonology, intonation, fluency, and a total of the three subtest scores was developed. Data were collected for 87 fifth and 74 fourth grade students. Each grade level contained three treatment groups: (1) Language Cognition English (LCE), students receiving intensive oral-aural English instruction; (2) Language Cognition Spanish (LCS), students receiving intensive oral-aural Spanish instruction; (3) Control, students receiving English instruction according to district curriculum policy. Two samples were involved in this study: (1) fifth graders receiving continuous treatment for five years in each of the three treatment groups; and (2) fourth graders receiving continuous treatment for four years in each of the three treatment groups. Major statistical techniques used were analyses of variance, chi square, and intercorrelations. The design resulted in nine basic hypotheses. An additional post hoc analysis was also conducted.

Limitations of the Study

(1) Sample Composition: The number of subjects who have continuous treatment for four and five years is very small in comparison to the original sample of over 1500. The total number of subjects for each treatment group was approximately the size of one classroom, yet they had to be sampled from six different schools, since there were no remaining intact classrooms. Reasons for the small number of subjects are a matter of speculation. Attrition rate is high among the project schools. Changes in

administrative policy resulted in arbitrary assignment of subjects to different treatment groups which does not reflect attrition due to dropouts. Therefore the impossibility of random selection of subjects for LCE and LCS groups may be considered a limitation of the study.

(2) The Experimental Instrument: The instrument devised to test language proficiency is not a standardized test. The scoring procedure of the phonological and intonational aspects of the test are of necessity subjective; however, the examiner scored all tests in order to reduce interexaminer differences.

Data on the means and standard deviations of the intonation subtest suggest that the scoring system was inappropriate. The range of the scale was four points per sentence with a maximum total of 144. All treatment groups attained nearly a perfect score. The means of the three treatment groups and the standard deviations for the treatments were quite close. The suspicion that the scoring procedure was weak is further substantiated by Hill's earlier comment that, in terms of intonation, an utterance is scored either right or wrong. If such is true, the scoring procedure for intonation should be considered a dichotomous variable which would call for a different statistical treatment.

(3) Test Reliability: Since no testing and retesting was done to establish test-retest reliability, the investigator relied on the consistency of responses. The contextualization of the items as an indication of the reliability of the test was used as suggested by Ingram.[1] There is no known statistical treatment by which an intratest reliability coefficient could be attained since scoring of this test involved simple counting.

(4) Preschool Experience: Data on previous school experience is unknown for both fifth and fourth grade students. It appears relatively safe to assume that the children in fifth grade did not receive kindergarten instruction since the socio-economic level of the area is very low. For fourth graders, however, it is possible that some, or perhaps many, received some preschool experience, for this was the year during which children began to receive federally funded Headstart instruction.

(5) Control Group: The experimenter was not in a position to draw a sample of students from the schools directly involved in the San Antonio Language Research Project. The administration suggested that the sample for the control group be drawn from a nearby school considered to be equal

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[1] Ingram, op. cit.

to the project schools in terms of socio-economic level, ethnicity, language, and experiential background. It is the opinion of the experimenter from observation of the school and interaction with the children and teachers that the selection of this school for control purposes on the above mentioned dimensions was reasonably accurate. However, it must be recognized that the control school received no special consultative help above and beyond what is typically available to all nonproject schools in the district. In view of the fact that teachers participating in project schools received special in-service training and extensive consultative help, the Hawthorne effect as well as teacher attitude, experience, and proficiency may have had a positive effect on the experimental treatments.

(c) Applicability of Findings: Inference from statistical findings should be limited to the sampled population. If the measure used in this study is valid and reliable, if the statistical analyses are appropriate and the sample is representative of the population under consideration, then the results of the study have direct application to the population from which the samples were drawn. Any other generalizations made would depend upon the similarity of characteristics of other populations to the samples of this study.

Conclusions

(1) The fifth grade findings indicate there are no significant differences in intonation among the treatment groups and substantiates the limitation of the scoring procedure of this particular subtest. The consistently significant differences yielded by the analyses of the data support the following conclusions: (a) the Spanish treatment group is superior to the English in fluency and total test score; (b) the English group is superior to the Spanish on phonology; (c) the control group ranks third on phonology, fluency and total test score.

(2) The fourth grade findings indicate there were no statistically significant findings on any variable analyzed. Though nonsignificant, the mean scores and standard deviations tend to lead to the belief that in the fluency and total scores the Spanish treatment is superior to the English treatment. Large standard deviations and probability levels substantially lower on the phonology and intonation further intensify such a belief. However, skewed distributions in the fluency portion of the test may be a more likely explanation for the phenomenon. Despite such speculation, probability levels of .16 for fluency and .35 for total score cannot justify such speculation.

(3) Comparing grade levels by treatments, a fairly consistent pattern emerges in that for both experimental treatments fifth grade mean scores are higher than fourth grade mean scores. For the control group, however, such is not the case for fluency and total language (probably a reflection of the exception in the fluency scores). When looking at mean scores for control group on fluency subtest a 10.5 point decrease occurred from fourth to fifth grade while a 49 point increase occurred for LCE and a 36 point increase occurred for LCS. Resultant post hoc analysis indicate that the decrease in the control group is not statistically significant. The experimenter wishes to point out that despite the statistical treatment, an artifact may be operating which was eluded by the statistical technique used.

(4) Based on the intercorrelation analysis, with the exception of intonation, all tests correlated significantly with each other. The very high correlation between fluency and total score (r = .96) suggests that for a quick measure of general language proficiency the two and one-half minute fluency test would give the teachers essentially the same information as the fifteen-minute total test.

A Theoretical Hypothesis Based on Findings and Conclusions

Conclusions as to why the scores of children receiving Spanish treatment excelled the other treatment groups when the criterion was English proficiency remains unexplained. In an investigation on retention in reading through the summer months, Arnold[1] found similar results, i.e., the group who had received continuous intensive instruction in Spanish for one hour a day throughout the school year showed significantly greater retention on an English reading vocabulary test. He offered no explanation for this phenomenon.

A possible explanation is that hearing one's own language amplifies the phonemic and syntactical contrasts between English and Spanish, thus making it easier for Spanish speakers to learn English. Assume that a child who learns Spanish as a native language knows a Spanish phoneme designated as A. When he goes to school he hears only English, which is foreign to him, and an unacceptable substitute for the equivalent English phoneme designated as it emerges in his speech. He begins to speak English with a distorted sound system, which schematically is shown as

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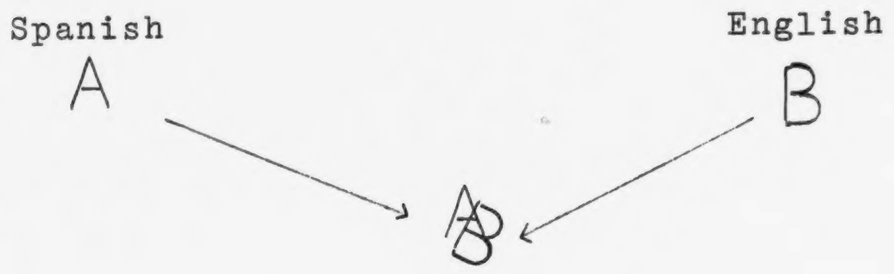
[1] Richard D. Arnold, "Retention in Reading of Disadvantaged Mexican-American Children During the Summer Months," Paper presented at the International Reading Association Convention, Boston, Mass., April, 1968.

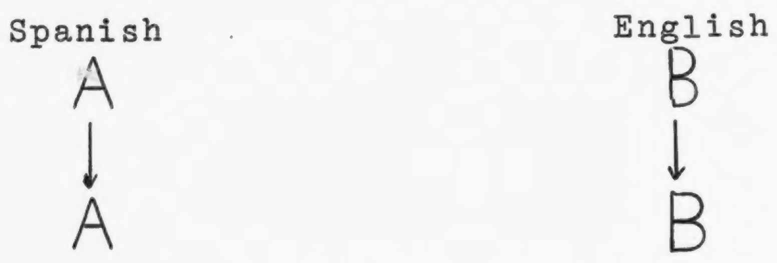
Figure 2



The resultant sound would be unacceptable in either language.

If, on the other hand, he receives instruction in standard Spanish, phonemes in his own language are reinforced and take on a distinct entity: designated as A in Figure 3. Hearing English throughout the remainder of the day, the English equivalent emerges as well, but with an enhanced awareness of two different discrete sounds between the languages, a student's sound system may be shown as

Figure 3



The same analogy could be drawn from contrasting syntactical patterns and other features of both languages which could account for the superior performance in English proficiency by children receiving partial instruction in Spanish.

Recommendations for Further Research

(1) It would appear from the results of the data that structured pattern practice in Spanish has a salutory effect on second language learning, when the second language is English. A system (e.g., taped exercises) which would provide built-in individual practice should prove beneficial in that: (a) teacher time could be conserved for group work on other topics; and (b) such a device could compensate for a teacher's inability to speak Spanish; likewise, a taped program in English could compensate for a teacher's non-standard English. A program incorporating such systems should be tested.

(2) Norms for the fluency sections of the Language Proficiency Test used in this study should be established on a group of middle-class white native English-speaking children, whereby a standard could be set to measure fluency more meaningfully. Teachers could use the variance from the norm as a diagnostic aid in teaching. Further exploration is also needed in the area of meaningful language deviations.

(3) The Language Proficiency Test results should be correlated with reading achievement scores. It is likely that a child's measured oral language ability is a predictor of reading success.

(4) It might be well to determine if one of the components of language such as phonology, intonation, or fluency is more highly correlated with reading achievement than another. If so, these base line data would provide teachers with information for instructional purposes.

(5) The construction of the instrument used in this study does not provide for a measure of syntactical competence. However, an analysis of the responses of subjects could give such a measure, conceivably revealing a language competence in grammatical structures of the target language. A syntactical analysis of fluency should be made. The analysis would be valuable in developing materials for compensatory instruction in reading and other language arts activities. Hopefully, an instrument that would make such an analysis more practical might be developed.

(6) It would be enlightening to administer the Language Proficiency Test to different ethnic and/or geographic groups at the same grade level and compare the results to determine if the levels of proficiency are similar, and

if not, where the major deviations occur. Thus recommendations could be made for implementing similar language programs in school areas where such deficiencies appear.

APPENDIX A

PRERECORDED INSTRUCTIONS FOR STUDENTS WHO WERE TESTED

Instructions preceding Gloria and David Test 6, which was the phonological and intonation portion of the experimental test:

Hello, will you help us learn something about the way children speak? You are going to see a series of pictures and hear a lady say a number of sentences which she will ask you to repeat. Will you listen carefully to the way she says the sentences and then try to say them exactly the way she does? Be sure that she has finished speaking before you start. Thank you, here is the lady.

These instructions were prerecorded, and the voice was that of Gib Devine, President, Language Arts, Inc.

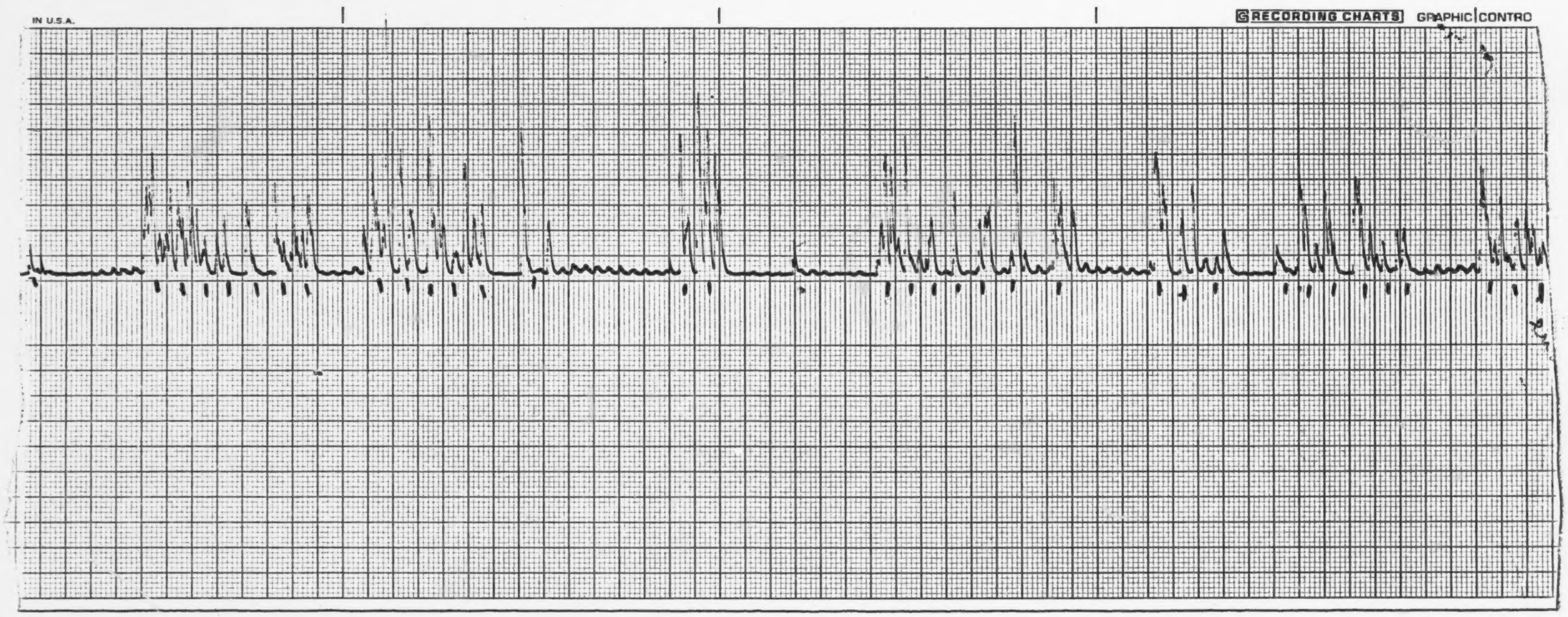
The following is a transcript of the prerecorded instructions on the experimental test which immediately followed the phonological and intonation portion of the test.

Thank you, that was fine. Now will you please do one more thing? Will you pretend for a few minutes that you are a radio announcer and you were telling the people listening to you about some pictures which we will show you. Each picture will stay on the screen about thirty seconds, so you should start speaking as soon as the picture comes up and keep speaking about it until a new picture appears. Just to give you an idea, if you were talking about the picture that is on the screen now you could say, "I see a boy and girl. They seem to be about the same age--about eleven or twelve and they aren't doing anything right now--just sitting down and kind of smiling. I notice that the girl's name is Gloria and the boy's name is David. Gloria is wearing a red dress and has red ribbons in her hair and David is wearing blue jeans and a red and white sweater." Do you see what I mean? And don't be nervous. Just speak naturally. Now here is the first picture.

Thank you, that's the last picture.

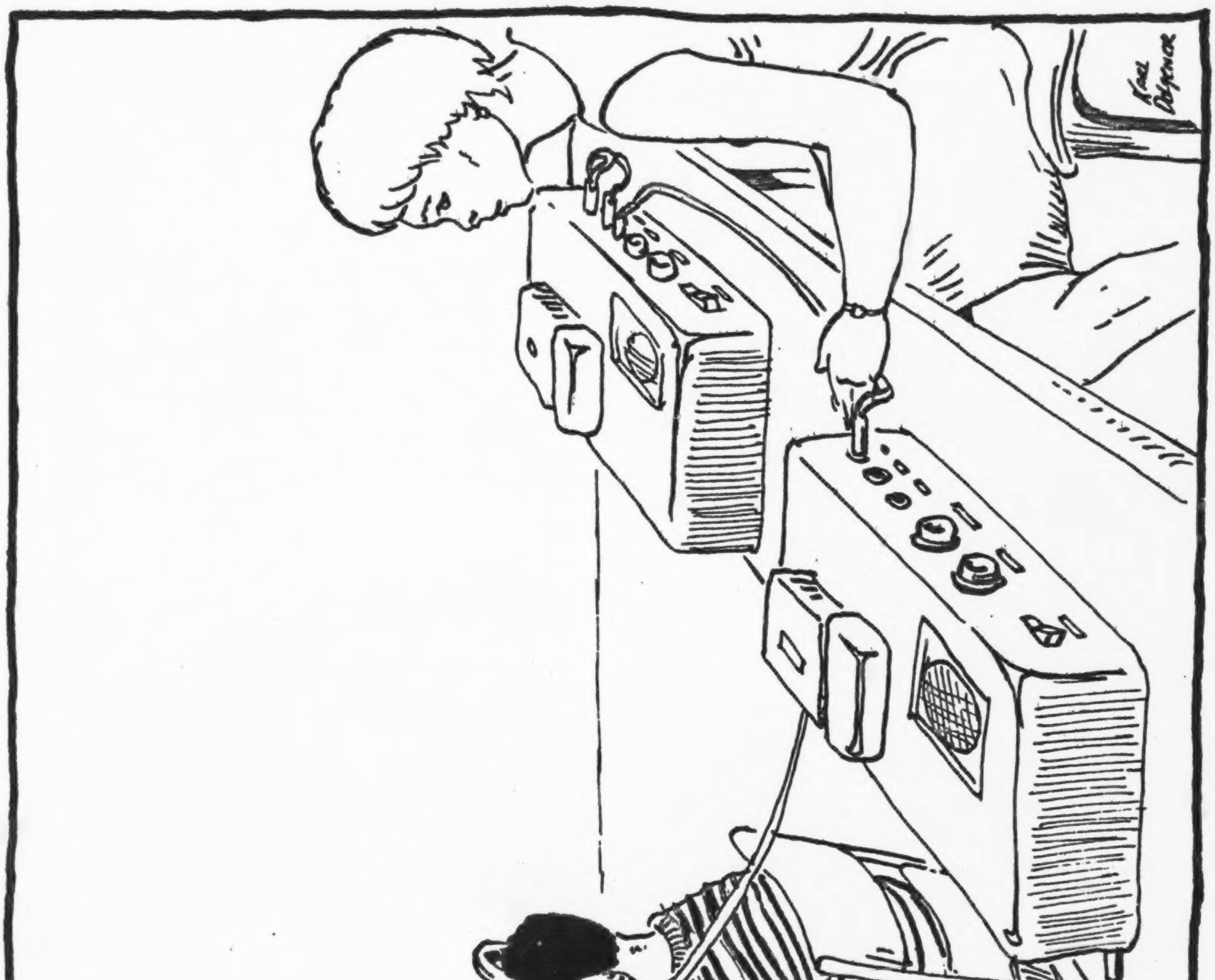
APPENDIX B

SAMPLE OF SANBORN SOUND TAPE RECORD


IN U.S.A.
G RECORDING CHARTS
GRAPHIC CONTRO

APPENDIX C

VISUAL PRESENTATION OF TESTING PROCEDURE



APPENDIX D

SCORING SHEET

ORAL LANGUAGE TEST

Name Age Grade School City Symbol

1. Mother washes David's neck.
   She washes his ears.
2. Gloria takes a bath
   She has the soap.
3. Gloria washes her hair.
   She has soap on her head.
4. Gloria cries.
   The soap is in her eyes.
5. Soap is on her nose.
   Mother helps Gloria.
6. David has a toothbrush.
   He cleans his teeth with his brush
7. Gloria has a toothbrush.
   She cleans her teeth with her brush
8. David and Gloria are clean.
   They are on their knees.
9. The children go to bed.
   The light is not on.
10. Mother wakes Gloria and David.
    The children wake (the) baby.

11. Gloria and David both get clean clothes.

They can dress in their clothes

12. David can button his shirt.

Gloria cannot button her dress.

13. The socks are on Gloria's feet.

Gloria has her shoes.

14. Baby has a sock on his leg.

He has a shoe on his foot.

15. Gloria has a comb for her hair.

David has a brush for his hair.

16. The family eats breakfast.

Gloria and David drink milk.

17. The children wash their hands.

They brush their teeth.

18. Gloria gets a coat.

David gets a little coat.

19. The children don't play today.

Today they go to school.

20. Daddy goes to work.

Mother works at home.

APPENDIX E

RATING FORM SUPPLIED TEACHERS IN ORDER TO DETERMINE RELATIONSHIP BETWEEN NUMERICAL SCORES AND TEACHER RATINGS

ENGLISH PROFICIENCY

	Fluent	Moderately Fluent	Linguistically Handicapped
Teacher's Name			
Child and code number			
Child and code number			
Child and code number			
Child and code number			

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